EA-87-02

Ontario

ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 356

DATE: Monday, February 24, 1992

BEFORE:

A. KOVEN Chairman

E. MARTEL Member

FOR HEARING UPDATES CALL (COLLECT CALLS ACCEPTED) (416)963-1249

FARR & ASSOCIATES REPORTING INC.

(416) 482-3277

709, Toronto, Canada M4P 1E4

EA-87-02

Ontario

ENVIRONMENTAL ASSESSMENT BOARD

VOLUME: 356

DATE: Monday, February 24, 1992

BEFORE:

A. KOVEN Chairman

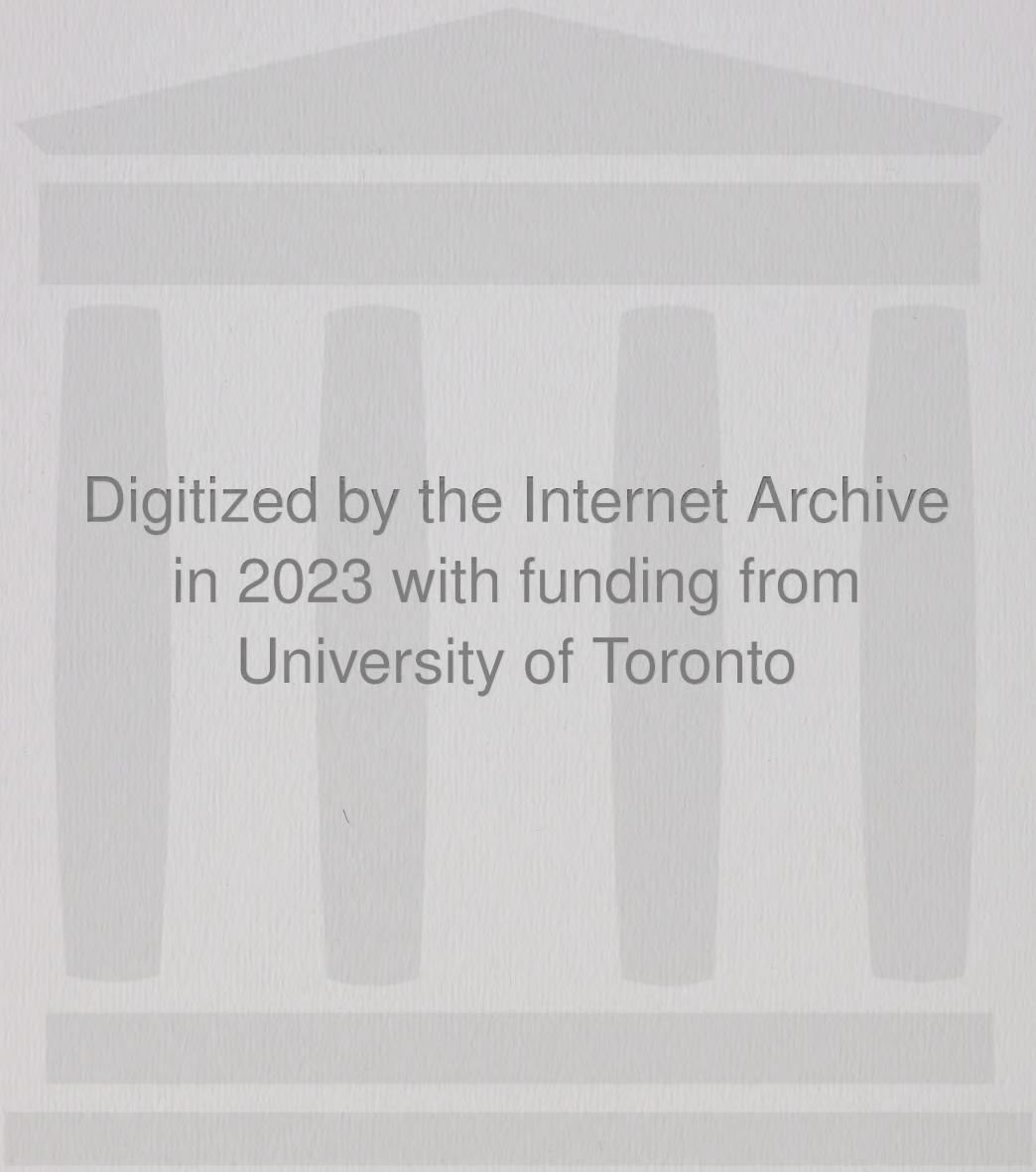
E. MARTEL Member

FOR HEARING UPDATES CALL (COLLECT CALLS ACCEPTED) (416)963-1249

FARR & ASSOCIATES REPORTING INC.

(416) **482-3277**

2300 Yonge St., Suite 709, Toronto, Canada M4P 1E4



EA-87-02

HEARING ON THE PROPOSAL BY THE MINISTRY OF NATURAL RESOURCES FOR A CLASS ENVIRONMENTAL ASSESSMENT FOR TIMBER MANAGEMENT ON CROWN LANDS IN ONTARIO

IN THE MATTER of the Environmental Assessment Act, R.S.O. 1980, c.140;

- and -

IN THE MATTER of the Class Environmental Assessment for Timber Management on Crown Lands in Ontario;

- and -

IN THE MATTER of a Notice by The Honourable Jim Bradley, Minister of the Environment, requiring the Environmental Assessment Board to hold a hearing with respect to a Class Environmental Assessment (No. NR-AA-30) of an undertaking by the Ministry of Natural Resources for the activity of Timber Management on Crown Lands in Ontario.

Hearing held at the offices of the Ontario Highway Transport Board, Britannica Building, 151 Bloor Street West, 10th Floor, Toronto, Ontario, on Monday, February 24th, 1992, commencing at 10:30 a.m.

VOLUME 356

BEFORE:

MRS. ANNE KOVEN	Chairman
MR. ELIE MARTEL	Member

A P P E A R A N C E S

MR. V. FREIDIN, Q.C. MS. C. BLASTORAH MS. K. MURPHY	)	MINISTRY OF NATURAL RESOURCES
MR. B. CAMPBELL MS. J. SEABORN MS. N. GILLESPIE	)	MINISTRY OF ENVIRONMENT
MR. R. TUER, Q.C. MR. R. COSMAN MS. E. CRONK MR. P.R. CASSIDY MR. D. HUNT	)	ONTARIO FOREST INDUSTRY ASSOCIATION and ONTARIO LUMBER MANUFACTURERS' ASSOCIATION
MR. R. BERAM		ENVIRONMENTAL ASSESSMENT BOARD
MR. J.E. HANNA DR. T. QUINNEY MR. D. O'LEARY	)	ONTARIO FEDERATION OF ANGLERS & HUNTERS
MR. D. HUNTER MR. M. BAEDER	)	NISHNAWBE-ASKI NATION and WINDIGO TRIBAL COUNCIL
MS. M. SWENARCHUK MR. R. LINDGREN	)	FORESTS FOR TOMORROW
MR. D. COLBORNE MR. G. KAKEWAY	)	GRAND COUNCIL TREATY #3
MR. J. IRWIN		ONTARIO METIS & ABORIGINAL ASSOCIATION
MS. M. HALL		KIMBERLY-CLARK OF CANADA LIMITED and SPRUCE FALLS POWER & PAPER COMPANY

APPEARANCES (Cont'd):

MR. R. COTTON	BOISE CASCADE OF CANADA LTD.
MR. Y. GERVAIS) MR. R. BARNES)	ONTARIO TRAPPERS ASSOCIATION
MR. L. GREENSPOON) MS. B. LLOYD)	NORTHWATCH
MR. J.W. ERICKSON, Q.C.) MR. B. BABCOCK)	RED LAKE-EAR FALLS JOINT MUNICIPAL COMMITTEE
MR. D. SCOTT) MR. J.S. TAYLOR)	NORTHWESTERN ONTARIO ASSOCIATED CHAMBERS OF COMMERCE
MR. J.W. HARBELL	GREAT LAKES FOREST
MR. S.M. MAKUCH	CANADIAN PACIFIC FOREST PRODUCTS LTD.
MR. D. CURTIS) MR. J. EBBS)	ONTARIO PROFESSIONAL FORESTERS ASSOCIATION
MR. D. KING	VENTURE TOURISM ASSOCIATION OF ONTARIO
MR. H. GRAHAM	CANADIAN INSTITUTE OF FORESTRY (CENTRAL ONTARIO SECTION)
MR. G.J. KINLIN	DEPARTMENT OF JUSTICE
MR. S.J. STEPINAC	MINISTRY OF NORTHERN DEVELOPMENT & MINES
MR. M. COATES	ONTARIO FORESTRY ASSOCIATION
MR. P. ODORIZZI	BEARDMORE-LAKE NIPIGON WATCHDOG SOCIETY

APPEARANCES (Cont'd):

MR. R.L. AXFORD	CANADIAN ASSOCIATION OF SINGLE INDUSTRY TOWNS
MR. M.O. EDWARDS	FORT FRANCES CHAMBER OF COMMERCE
MR. P.D. McCUTCHEON	GEORGE NIXON
MR. C. BRUNETTA	NORTHWESTERN ONTARIO TOURISM ASSOCIATION

INDEX OF PROCEEDINGS

INDEX OF EXHIBITS

INDEX OF EXHIBITS (Con'td)

---Upon commencing at 10:30 a.m.

MADAM CHAIR: Good morning. Please be seated.

Good morning, Mr. O'Leary.

MR. O'LEARY: Good morning, Madam Chair, Mr. Martel. Thank you for the indulgence for being a bit slow this morning getting off the mark.

I would like to introduce you to our two panel members this week. On the far end of the table is Dr. Atif Kubursi and to his right is Dr. Peter Victor. Perhaps we could start by having the witnesses sworn, Madam Chair.

MADAM CHAIR: Yes. Do you wish to be sworn or affirmed, gentlemen.

DR. VICTOR: Affirmed, please?

MADAM CHAIR: Affirmed. Dr. Kubursi?

DR. KUBURSI: (nodding affirmatively)

MADAM CHAIR: Thank you.

PETER VICTOR,
ATIF KUBURSI, Affirmed.

MR. O'LEARY: You have to do both.

MADAM CHAIR: Separately?

MR. O'LEARY: Oh. I didn't hear Mr. -- did you respond to that question?

DR. KUBURSI: Yes.

MR. O'LEARY: Oh, I didn't hear you. My apologies. Could we perhaps mark a few documents as exhibits.

MADAM CHAIR: We will start out with the Panel 8 written evidence, Mr. O'Leary.

MR. O'LEARY: Yes.

MADAM CHAIR: This will become Exhibit 2110.

---EXHIBIT NO. 2110: OFAH/NOTOA Witness statement re: Panel No. 8.

MR. O'LEARY: Next, would be the errata and I believe we've left a copy on your desk. No, the errata hasn't been distributed.

There's still one page we're going to add to it. So why don't we hold an exhibit number for that, Madam Chair, we'll just add it to it and then file it in a few moments.

MADAM CHAIR: All right. Why don't we make the errata Exhibit 2110A.

---EXHIBIT NO. 2110A: Errata re: OFAH/NOTOA Panel No. No. 8.

MR. O'LEARY: Next is the interrogatory responses and they are attached to a letter dated February 12th, 1992 from J.E. Hanna and Associates to yourself, and there are 15 pages, plus there is a

further response to Question 25(b) which we'll be filing this morning, and a paper that is attached to it which is of the Canadian Pulp and Paper Association, it's the Annual Meeting Issue dated January, 1991 and I would suggest that we just mark that all as one exhibit.

MADAM CHAIR: That will become Exhibit 2111.

---EXHIBIT NO. 2111: Interrogatories re: OFAH/NOTOA Panel No. 8 with covering letter dated February 12th, 1992 from J.E. Hanna and Associates to Anne Koven (Chairman), and further response to Interrogatory Question No. 25(b) and paper entitled: Annual Meeting Issue dated January, 1991 from the Canadian Pulp and Paper Association.

MR. O'LEARY: Next, we have two updated curriculum vitaes, first for Dr. Peter Victor. There's some copies left with yourselves. Perhaps we can mark that as the next exhibit.

MADAM CHAIR: We will make Dr. Victor's CV Exhibit 2112A.

---EXHIBIT NO. 2112A: Updated CV for Dr. Peter Victor.

MR. O'LEARY: And then the update of Dr. Kubursi's would be 2112B.

MADAM CHAIR: That's right, Mr. O'Leary.

---EXHIBIT NO. 2112B: Updated CV for Dr. Atif Kubursi.

DIRECT EXAMINATION BY MR. O'LEARY:

Q. Dr. Victor, perhaps we could turn to you first and I ask you to turn to Exhibit 2110, which is the witness statement.

DR. VICTOR: A. Yes.

Q. And can I ask you, in respect of those answers where you're identified as the responsible party, were these responses prepared by you or under your direction and supervision?

A. Yes, they were.

Q. And in respect of the errata that has been marked as Exhibit 2110A, can I ask you whether or not those responses were prepared by you or under your direction and supervision?

A. Yes, they were.

Q. And in respect of the interrogatory responses which have been marked as Exhibit 2111, can I ask you whether or not the responses therein were prepared by you or under your direction and supervision?

A. Yes, they were.

Q. And can I ask you whether you adopt those documents as your evidence in this hearing?

A. Yes, I do.

Q. And do you also adopt the updated

curriculum vitae which is marked as Exhibit 2112A--

A. Yes.

Q. --as your evidence?

A. Yes, I do.

Q. And do you also adopt the rationale in the Coalition's terms and conditions which are identified as Exhibit 1637 opposite all those terms and conditions which you identify your evidence relates to at page 7 Question 9 of the witness statement?

A. Yes, I do.

Q. Thank you. Dr. Kubursi, can I also ask you to turn to Exhibit 2110 which is the witness statement, and those responses where you're identified as the author, were they prepared by you or under your direction and supervision?

DR. KUBURSI: A. Yes, they were.

Q. And in respect of the errata which has been marked as an exhibit, were they also prepared by you or under your direction and supervision?

A. Yes, they were.

Q. And the interrogatory responses, were they prepared by you or under your direction and supervision?

A. Yes, they were.

Q. And do you adopt those documents as

your evidence in this hearing?

A. Yes.

Q. And Exhibit 2112B is the update in your curriculum vitae, do you also adopt that as your evidence in this hearing?

A. Yes, I would.

Q. Do you similarly adopt the rationale contained in the terms and conditions of the Coalition which is Exhibit 1637, the rationale is opposite those terms and conditions set out on page 7, Question 9.

Do you also adopt the rationale as part of your evidence in this hearing?

A. Yes, I would.

Q. Thank you.

Perhaps I could start with you, Dr. Victor, and turn to your curriculum vitae.

Madam Chair, we're in the situation once again where none of the parties have identified in their list of issues that were filed that they intend to challenge any of these witnesses and, accordingly, unless I'm instructed otherwise, I propose just briefly to go through it to expedite matters.

MADAM CHAIR: Go ahead, Mr. O'Leary.

MR. O'LEARY: That's fine. Thank you.

Q. I see, Dr. Victor, turning to page 1

that you received your Bachelors Degree from the University of the Birmingham in 1967?

DR. VICTOR: A. That's correct.

Q. And that was an honours first class?

A. Yes.

Q. And you received our doctoral degree in economics from the University of BC in 1971?

A. Yes.

Q. And I understand you specialized in natural resource economics and public finance?

A. Yes.

Q. Can you tell us what your thesis was in respect of that degree?

A. Yes. My thesis was a study that was concerned with the integration of the economy and the environment. It was one of the first studies that tried to bring together these two aspects of life which, up to that time, had really been kept separate. It was a highly quantitative study and it also had a theoretical base to it.

Q. All right. And I understand that listed in your professional memberships, you're a member of the Association of Environmental and Resource Economists?

A. Yes, that's true. That's an

association of economists throughout North America who are concerned with environmental and resource issues and it includes Americans and Canadians.

Q. All right. Now, at page 5 of the witness statement, Dr. Victor, you indicate that the particular areas of your expertise and experience which you wish to be qualified to give opinion evidence are environmental and resource economics and the application of socio-economic evaluation methodologies, particularly in relation to timber management plan.

Can I ask you in respect of your education, what you can advise the Board is relevant for the purposes of understanding your qualifications to give opinion evidence in those two areas?

A. Certainly. Both in my undergraduate and graduate training I took many courses, wrote many papers on issues relating directly to the environment and to resource management and specifically concerned with evaluation issues.

Among the subjects treated specifically in the courses was the issues relating to forestry economics and, consequently, a lot of the work that I did through my student years were very much concerned with these issues.

Q. Thank you. Going down the page under

the subheading Career History, I understand that you are presently the Assistant Deputy Minister with the Policy Development and Intergovernmental Affairs Branch for the Ontario Ministry of Environment; is that correct?

A. Yes. It's a division not a branch.

Q. Oh, I apologize. And can you tell us what your duties and responsibilities there are briefly?

A. Certainly. This is a new division, it has three main functions. First of all, it's charged with developing a strategic plan for the Ministry; secondly, it's charged with developing policies, major new policies for the Ministry; and, thirdly, it deals with all of the intergovernmental affairs that the Ministry is involved with.

As part of -- in order undertake this work, of course, issues concerned with evaluating alternatives is very significant when you're looking at different policies and different plans, evaluation methods of various kinds are brought to bear.

Q. All right. And I understand that you entered that position of employment in December, 1991?

A. That's correct, yes.

Q. All right, thank you. Moving down to

the next area identified under Career History you refer to VHB Research and Consulting Inc. Can you tell us what relevant activities you participated in as a principal of that firm, keeping in mind the two qualifications in which you wish the Board to approve you as an expert to give opinion evidence in this hearing?

A. Yes. VHB Research and Consulting is a company of 10 to 12 people and it's a multi-disciplinary company, it has people in it who are expert in the biophysical sciences and others of us who are expert in economics and other social sciences.

And so one of the aspects of the work that is I believe directly relevance to our evidence is the proven experience that I've had working in multi-disciplinary teams, what is required to do that and to make it work.

Secondly, I was involved in several studies that I'll perhaps talk a little more about later on, but these studies were concerned with the various aspects of evaluation, evaluating different kinds of environmental effects, environmental damages.

Q. I similarly ask you the same question in respect of the next position you identify with Canadian International Development Agency where I

understand you held a position from 1985 through 1987?

A. Yes. There I was overseas for two years giving advice to the Kenya Ministry of Energy on regional development, specifically with respect to renewable energy.

In Kenya renewable energy is primarily a question of energy from wood, and 75 per cent of the country's energy comes from wood, and so most of my work there was concerned in one way or another with wood energy supply planning.

Q. You next identify Victor & Burrell Research and Consulting from 1979 to 1987 you were a principal. Can you tell us what relevant activities you were involved in there for the purposes of understanding your qualifications in the two areas identified in the witness statement?

A. Yes. There were three major types of study, examples of studies that I would point to there. First, again, was some evaluation studies that I undertook, again concerned with environmental issues, environmental dimensions.

Secondly, did a significant piece of work - well, I better not say that - a major piece of work, it was significant for me, for the pulp and paper industry for the Economic Council of Canada looking at

the various aspects of regulating that industry from the point of view of protecting the environment.

And the third major area of work was with respect to a project for Statistics Canada which involved laying out in considerable detail the design of a simulation model involving all aspects of forest production, harvesting, access and so on, right through to marketing.

So I think those three were the most important aspects of my work there.

Q. Thank you. Can I also you the same question in respect of your position with the University of Toronto as a research associate with the Institute for Environmental Studies?

A. Yes. During those years my primary reponsibilities as a part time -- through my part-time involvement with the Institute was to teach various aspects of environmental and resource economics, much of which is directly relevant to my evidence.

Q. All right. On the next page you indicate you were an adjunct associate professor at York University, Faculty of Environmental Studies. Can you tell us what relevant activities or areas would be of interest to the Board in understanding your qualifications here?

A. Yes. I have been teaching courses there on economics of resource management and pollution abatement for that 15 or 16-year period and, again, much of the material covered in the courses is relevant to my evidence.

Q. Thank you. Moving down to the Ontario Ministry of the Environment, from 1973 to 1977, you indicate that you were a senior economist. Can you tell us a little more about your duties and responsibilities there?

A. Yes. When I was brought into the Ministry in 1973 it was the first time that the Ministry had retained economists to help with the policies and programs of the Ministry.

One of the pieces of work that I did at the time was an extensive study of the pulp and paper industry and the environmental damages that it causes, how the industry might most effectively be regulated.

Q. Thank you. Moving now to the subheading Projects, Dr. Victor, could you identify briefly several of the projects in which you've been involved in and briefly describe how they are relevant for the purposes of understanding your qualifications to give expert opinion evidence in this hearing?

A. Yes. Well, there are a number of

studies here which I think form that position.

The first one I'll mention is the fourth one on your list entitled Coordination and Synthesis of a Socio-Economic Assessment of Ontario Waste Management Initiatives.

In simple terms this was a project that was looking at the feasibility of achieving the government's waste diversion objectives for solid waste management and it looks at various policies that the government might introduce and their effect on different parts of the waste stream, and the area where I think it ties into my evidence is related to the prospects for recycling.

Turning to the next page, the second item there, the Bio-Economic Evaluation of the Effects of Fossil-Fired Generating Station Emissions on Water Quality was a study conducted for Ontario Hydro.

This was a study that combined both an aquatic science component and an economic analysis and what we did was to look at the effects of emissions from the various Hydro stations and the effects they would have on lakes and rivers of the province, and then we estimated the effect that the change in the aquatic conditions might have on participation of anglers, and then we valued that change in

participation.

This was a study that was specifically designed to come up with dollar estimates of these damages so that they could be built into the prices charged to Americans when Ontario Hydro sells power for export.

The next study I would refer to is on page 4, the second item down titled: Coordination and Synthesis of an Economic Assessment of Implementing the Proposed Revisions to Regulation 308.

Regulation 308 is the principal regulation that the Ministry of Environment uses for regulating air pollution in the province, and there were proposals then to revise the regulation and, as part of the examination of these proposals, a number of studies were done to look at the beneficial effects of changes in the regulation and the costs that might be imposed on industry as a result of changes in the regulation.

The beneficial effects included effects on water quality, effects on terrestrial systems, effects on human health, effects on buildings and materials. Again, a wide range of various kinds of environmental damages which were then valued as part of that exercise.

The study did also include an economic impact component where the costs of complying with the new regulation were looked at and the implications for industry throughout Ontario analysed.

I'll next draw your attention to three studies that come, one after the other, beginning with the Study of Effects of Fossil-Fired Generating Station Emissions on Human Health. There's three of them, one on human health, one on water quality, and then one -- and both of those related to the emissions from fossil-fired plants, and the third one, also concerned with human health, relating to the emissions from nuclear powered plants.

Again, these studies were designed to come up with dollar evaluations of the damages that generating power for export would impose in Ontario so that those dollar values could be built into the prices that Ontario Hydro charges for its exported energy.

These were done in response to a requirement by the National Energy Board which had to approve the exported power.

I'll turn to page 6 of my CV. At the top of the page is a study that I've already referred to briefly. In a way, I have to apologize for these titles, these are titles that generally are imposed

upon consultants not just created by them.

But anyway this is, Design of a Data Rich Policy and Management Simulation Model of the Forestry Sector of Canada. What that meant was that we were asked to design a structure of a very detailed model rich in data if you were to implement the model, and it could be used for managing the forestry sector of the province.

The design that we set out was expressed in a series of diagrams which showed how the various components of the forestry sector, right from the harvesting of the trees - in fact prior to - accessing the trees and harvesting the trees, all the way through to the processing and final sale of the product. So it was a very detailed piece of work.

The fourth item on that page is the reference to An Economic Assessment of Acid Rain Impacts on Sport Fishing in the Haliburton/Muskoka Region. This study, which I'll be talking about in more detail later on, looked at the effects of acid rain impacts on sport fishing by looking at the effects, first of all, on aquatic conditions and then looking at the likely effects on survivability of the species, and then we did an evaluation of how that would affect angling behaviour, and then the value of

changes in angling behaviour.

Coming down to the one about the middle of the page, A Methodology for Estimating the Impacts of Acid Deposition in Ontario. This was a somewhat similar study to the one I've just described except the methodology was a little different. We focused there on effects of acid deposition on things of commercial value. So that included effects on commercial fishing, on commercial furs, on forestry, forest productivity and so on.

Again, it was a quantitative study where we had to estimate changes in economic value as a result of biophysical changes in the environment, in that cased caused by acid deposition.

I think those are the main studies that I would refer to.

Q. Dr. Victor, could I turn you to page 9 of your CV, and under the subheading Papers, could you identify one or two papers which you think would be helpful to the Board in understanding your qualifications?

A. Well, most of these papers in one way or another are concerned with the connection between economics and environment which can show itself in various ways, but one I would point to - in fact, it

was the first piece of professional work I ever did - was "A Comparison of Alternative Investment Criteria" which was undertaken as part of a large project on forest investment criteria funded by the Department of Forestry, Rural Development in Ottawa.

Then turning the page to page 10, the second item there refers to a paper entitled, "Product Travel Cost Approach: Estimating Acid Rain Damage to Sport Fishing in Ontario".

This is a published version of the study that I was referring to a moment ago. I think the significance here is that this was a peer reviewed paper and the methodology that we used was accepted as consistent with the general standards of economics.

Q. Thank you. Now, I see under other activities that you've been qualified as an expect witness before the Ontario Environmental Assessment Board previously.

A. Yes.

Q. All right. Is there anything from those situations that might be relevant in terms of your qualifications to give evidence in the areas before this particular panel?

A. Yes. The first time I was qualified as an expert witness before the Board was concerned

with the sighting of the transmission line, I think southeastern Ontario -- southwestern -- it was southwest or southeast. Anyway, the main point is that it was concerned with different methods of evaluating alternative routes, and the critical role that evaluation methodology can play in choosing the best route.

Q. All right. I also understand that in respect of the last items identified in your curriculum vitae where you indicate you're a member of, that you're no longer members of those particular groups and associations. Is there a reason for that?

A. Yes. I had to resign by membership of most of those when I took the position of ADM in the Ministry.

Q. Thank you.

MR. O'LEARY: Madam Chair, I respectfully submit that Dr. Victor is qualified to give expert opinion evidence in respect of the two areas identified at page 5 Question No. 4 of the witness statement.

MADAM CHAIR: Are there any objections from the parties?

MR. FREIDIN: I'm not going to raise any formal objections, but I do have questions in relation to some of the qualifications, particularly the

emphasis on -- it says the application of socio-economic evaluation methodologies particularly in relation to timber management planning. I'll have some questions about that. But generally, no.

MADAM CHAIR: All right then, Dr. Victor shall be qualified to give evidence in the areas of environment and resource economics and the application of socio-economic evaluation methodologies.

MR. O'LEARY: Thank you.

Q. Okay. Dr. Kubursi, could I ask you to turn to Exhibit 2112B, which is your curriculum vitae, and I understand that you received a Bachelors Degree in Economics from the American University in Beirut?

DR. KUBURSI: A. Correct.

Q. And your Masters from Purdue in Economics in 1966?

A. Right.

Q. And your doctoral degree, again, from Purdue in Economics in 1969?

A. Correct.

Q. Can you speak up a little bit.

A. Yeah. Correct.

Q. Thank you. Can I ask you how your academic qualifications in any way assist the Board in

understanding the two areas in which you wish to be qualified to give opinion evidence as identified on page 5 of the witness statement, which are macroeconomics and economic impact assessment and macroeconomics of northern communities with particular reference to tourism and forestry industry?

A. Right. I've specialized in university, at least in terms of the majors I've chosen at the graduate level, in macroeconomics and input-output analysis and I've written my dissertation on macroeconomic controls.

The academic work that I've done and research work after my graduation was particularly in the area of impact analysis.

I've worked in 1971 with Treasury Economics in the Ontario government and I was involved in developing the first input-output that was established, formulated and implemented later on for Ontario. This is before Statistics Canada had started to produce input-output tables for provinces.

I've worked consistently in the area of impact analysis and I've worked there for various ministries and have produced several research reports, but particularly two academic papers in the area of input-output. I have more than a couple of dozen of

papers in refereed journals, peer reviewed journals in the area of input-output, impact analysis, socio-economic evaluation of projects, feasibility studies.

Q. All right. And we're going to come to some of those, which I would ask you to identify in a moment. Under the subheading Academic and Other Relevant Appointments on page 1, can you identify those positions you've held which would assist the Board in understanding your qualification in the two areas identified in the witness statement?

A. Well, indeed at least two are very important here. I've been at McMaster as a professor of economics. I teach at the graduate, undergraduate level in the area of macroeconomics and in area of impact analysis and input-output economics.

I've worked at Cambridge University for one year with Sir Richard Stone, who's a Nobel Prize winner and he is the person credited with the new version of input-output, where we don't take every industry to produce only one commodity, but allowing us to move to the area where a commodity can be produced by more than one industry or one industry producing more than one commodity which is now known around the world as the Canadian version of input-output analysis.

I've worked with United Nations, the World Bank and several other areas on a consultancy basis, but also as a staff member of the United Nations Industrial Development Organization, particularly in terms of industrial feasibility, industrial impacts, employment, the generation capacities in developing countries.

Q. Fine, thank you. Turning over to page 2 under the subheading, Consulting Activities, you then identify on that page and the following two pages a number of activities.

I was wondering if you could identify those activities which would be helpful to the Board in understanding your qualifications in the two areas identified in the witness statement, being the macroeconomics and economic impact assessement, macroeconomics in northern communities.

A. Well, indeed my work with the Ministry of Treasury, Economics Intergovernmental Affairs, as it was referred to at that time, where intergovernmental affairs were part of Treasury and Economics, I worked primarily in the Econometric Research Branch where I helped in designing the first input-output for Ontario as I mentioned.

I also worked in the Regional Development

Branch where we have specialized particularly in northern development and issues of northern development.

I worked also in the Ontario Statistical Office where we devised most of the real product by industry for Ontario and some of the estimates of economic base in counties.

Of relevance too here is my different works with the Ministry of Industry and Tourism at the time but then Ministry of Tourism and Recreation and the Ministry of Natural Resources, where there I worked primarily in the area of economic impact and the analysis of the economic consequences of project development, physical expenditure, wildlife activity management and forestry management.

Q. Is there anything on page 2 and 3 -- sorry 3 and 4 that would also be of assistance?

A. Well, I mean, certainly you might want to consider also my work with Tourism Canada, with Tourism Ontario, with NOTOA and several other activities like the Town of Timmins.

And on page 3 -- I'm sorry, page 4, even some of the work that I have undertaken in the north, particularly that I'm now involved in with the Grand Council of the CREE in terms of evaluating the economic

impact of the great whale, in terms at least of looking at impact on northern communities. I think this would be relevant too.

Q. Now, under the subheading Papers Presented at Learned Conferences, could you identify those, and I'd ask you to limit it to just several examples.

Can you highlight those and give us a description for the purposes of allowing the Board to understand your qualification in the two areas we've identified in the witness statement.

A. Well, indeed. I mean, I've given talks all around the world, as you can see, but particularly several times I've lectured at Harvard on regional development. I also have been involved very extensively in the area of economic impact of tourism activities. I have worked specifically on macroeconomic impacts of projects, particularly with relation to job generation, impact on local communities, finance, the financial base, the tax base, but I think more relevant perhaps would be the kind of papers I've written on this.

Q. All right, fine. They start on page 8. Can you identify those?

A. Sure. I mean, I've written

extensively, again, and basically with very strong specialization in the area of input-output analysis and the way an input-output - and I will try to describe this perhaps if I have a chance - how this may relate, it can be used effectively and efficiently and with very limited resources to answer some important questions relating to the impact of various competing alternative activities on small communities.

The first work I really produced here was the "Sectoral Characteristics - this is page 8, the first one under articles - "Sector Characteristics of the Ontario Structure of Production". This was in the Ontario economic review, where we assessed the various industrial activities within Ontario and how they may be compared to one another.

And there we've generated basically eight indices that one might classify these industries under, one of which was the income it generates, the employment it generates, the tax it generates, how much it engages in export, to what extent it compromises the relationship of the province with other provinces and with other countries in terms of import, and we looked also at productivity indices in the sense that not only the amount they produce but what relationship one might really assign to the output compared to the input that

you are involved in.

The other one, and you can see even on the first page, I have the "Programming Models of Government Expenditures", particularly Ontario government expenditures and evaluating them in terms of their impact on the economy by department, by program.

I would also single out on page 9 the second one, the "Sub-Provincial Regional Income Multipliers in the Ontario Economy: An Input-Output Approach", it was in the Canadian Journal of Economics, it was with two of my colleagues, Drs. Williams and George.

There we tried as much as possible to go down below the provincial level because most economic models tend to be at the aggregate level and if they come from the aggregate Canadian level they will come only to the provincial level, and we felt that one to assess projects and activities would need to focus on a smaller area, and this was the first attempt that I know of in the region here that we went down to the county level.

I would also single out on page 11 the "Measuring Economic Stimulation From Capital Investment and Transportation". This is when you put infrastructure, when you bring communities together,

when you engage in building roads, construction, and was sort of course and what sort of economic results one might be able to derive how these two relate to one another.

On page 12, this is a new work that I've done with Dr. Butterfield but in association also with VHB and Dr. Victor before he left. This is on recycling, reducing, reusing, trying to see to what extent the recycling objectives of the Ministry of Environment would carry implications for the northern industry of pulp and paper and logging and timber, and I tried to see to what extent the inking technologies would shift the local production from the north to the south and what would be the implications on the total employment in the province and between the various regions.

MR. FREIDIN: Dr. Kubursi, which paper are you referring to on page 11?

DR. KUBURSI: It's page 12. Referring to the one on recycling -- not 11, 12, sorry.

MR. FREIDIN: Page 11.

DR. KUBURSI: Oh yeah. "Measuring -- this would be - one, two, three, four, five -- five from the bottom.

MR. FREIDIN: Thank you.

MR. O'LEARY: Q. Under the subheading Books, Monographs and Reports, are there any areas that you wish to identify?

DR. KUBURSI: A. Well, indeed I will here take at least four. On page 14 I would single out the Economic Impact of Tourism in Ontario. This is, again, one study in which we would trace the visitor expenditures in the various regions.

The Ministry of Tourism and Recreation partitions, divides the province in two 12 OTAA regions, Ontario Travel Association Areas, and tried to see to what extent expenditures in the north tend to seep back to the south in the sense that increasingly it was felt that industrial expenditures in the north, no matter where they were made, tend to create greater impact in the south than in the north where they're made.

And one interesting result that came out of these things and we had to trace it and to see to what extent it was true, is that tourism shifts the locales of production and consumption by moving things from the south into the north. So this would be very important two aspects.

The other one would be the Economic Impact of Remote Tourism Industry. This is a very

important question because here an evaluation is needed at least trying to look at the margin of conflict between tourism and logging and see to what extent one can look at the secondary effects of tourism on local communities.

I have also singled out here page 14 too the fourth from the bottom, Tourism Macroeconomic and Regional Impact Model that I have done quite a bit of work in development of software, tried to translate the theoretical complex model into usable friendly, actually no sophistication computer use, to generate the type of results that they would like to use and some of the systems that I've developed are now standard tools in the Ministry of Transportation, Ontario Ministry of Transportation and the Ministry of Tourism and Recreation and Ministry of Natural Resources too.

Q. Thank you. Dr. Kubursi, is there anything else in the balance of your curriculum vitae which you think might be of assistance to the Board in understanding your qualifications?

A. No, I think I covered most of it.

Q. All right, thank you.

MR. O'LEARY: Madam Chair, I respectfully submit that Dr. Kubursi is qualified in the areas set

out at page 5 Question 4 of the witness statement.

MADAM CHAIR: Any objection?

(no response)

Then Dr. Kubursi will be qualified to give evidence in macroeconomics and economic impact assessment as well as macroeconomics of northern communities with particular reference to the tourism and forestry industry.

MR. O'LEARY: Q. All right. Can I ask you both, gentlemen, whether or not you had an opportunity to review the witness statements for the FFT Panels 4 and 7 and portions of the oral testimony of Dr. Morrison and Mueller before today?

DR. VICTOR: A. Yes.

DR. KUBURSI: A. Yes.

Q. All right and in respect of a request by the Board that we attempt to avoid repeating the evidence there, could I ask you to try and limit your evidence in recognition of the fact that much of it may have been brought up already.

A. Will do.

DR. VICTOR: A. Yes.

Q. Thank you. Now, I understand, Dr. Victor, that you have prepared a presentation in respect of your evidence which you believe will be

helpful to the Board and the parties in understanding generally the message you want to leave, and I ask you or invite you at this time to proceed.

A. Yes, thank you.

MR. O'LEARY: The first thing I should do, Madam Chair, is make -- there's a set of overheads that have been left in front of you, it's entitled Some Key Issues to be Addressed by Panel 8.

MADAM CHAIR: Yes. We will make this Exhibit 2113 and this is a document of 28 pages.

MR. O'LEARY: That's correct.

MADAM CHAIR: And these are Dr. Victor's overheads.

MR. O'LEARY: Yes, they are, Madam Chair.

---EXHIBIT NO. 2113: 28-page document consisting of hard copies of overheads to be used by Dr. Victor during presentation of evidence.

DR. VICTOR: Madam Chair, Mr. Martel, I will make an effort here to unnecessarily duplicate evidence that you've already heard, however, some of the points that I want to make, some of the ideas that I want to bring forward, I believe, on occasion do merit a second hearing.

I'll give my own emphasis, try to explain where perhaps I think additional explanation might be

required but, as I say, I'm very cognizant of the fact that you don't want to hear things that you're already very familiar with.

The specific items and issues that I want to address and will be addressed both by myself and Dr. Kubursi throughout our appearance here follow.

First of all, we want to try and answer for you why we believe formal socio-economic techniques are useful in timber management planning and we will try to explain, the best we can, what the benefits of these techniques are and to demonstrate that we're not just promoting an exercise that will lead to more unnecessary paperwork.

Secondly, we need to address the issue of practicality, is it practical to perform routinely the types of formal socio-economic impact assessment techniques that are proposed. So we will pay some attention to staffing, to training, the data requirements and to cost.

Thirdly, is it reasonable to expect the kind of analysis that we're proposing to be performed for a timber management plan. One way of answering that question is to look at what is done in other jurisdictions.

Fourthly, there are some research and

development initiatives that are necessary to support these proposals and we will give you some indication how extensive these initiatives are, over what time they ought to be undertaken, and what do we do in the meantime.

As you will have seen from our written submission, the evidence that we are providing involves a description of several well-established techniques for estimating the non-timber values of forests, but in economic terms. And, secondly, for estimating the economic impacts associated with expenditures on tourism and recreation.

And the second major feature of what our evidence covers is the examples that we will be providing of the use of these techniques and of their practical value in timber management.

Now, we start with a perspective on timber management. We observe that forests provide a variety of services - I've listed some of them there - timber, recreation, watershed protection, wildlife habitat and, as we're now coming to realize, sometimes a sink for carbon dioxide. These are just some of the kinds of services that forests provide.

Now, from an economic point of view we recognize these as joint products. What that means is

when a forest provides one of these services it often provides the others as well and that by the nature of the case and if you diminish the capacity of the forest to provide one service, you may very well diminish its capacity to provide other services.

Joint products have a long history within economics. They initially were found to be very difficult to handle. Economists like to simplify the world, possibly to oversimplify it, but anyhow to simplify it to make sense of it.

And one of the simplifications that was made early on in the development of economics was that each product would only serve one purpose - a cup is a cup and a pen is a pen; you don't drink from a pen and you don't write with a cup. It makes analysis of those items very, very easy, but it doesn't always apply.

A simple example might with be with respect to a cow which both provides meat and hides, and so as you increase the number of cows you increase the supply of both meat and hides, not necessarily on a one to one relationship, but there's a certain jointness there.

Well, this also applies, as I've said, with respect to forests and it makes the analysis sometimes a little more difficult to do but, as I say,

it's been an issue that's been recognized in economics for a long time and economists have a good grasp of the complexity of the issues.

One of the problems that we can run into is allocating costs to different services that a forest provides. If you build an access road which opens it up for recreation and opens it up for timber, then the cost of the road is a cost that you have to assign to those things jointly.

Now, there are attempts sometimes made to say: Well, we'll give 50 per cent of the cost to one use, 50 per cent to another. Very often it's a very arbitrary allocation.

So just the general point I want to make is that we recognize from an economics point of view, a forest provides a series of joint products and we have to be clear in our analysis that that's the situation we're talking about.

The third perspective that I wish to add is, as I stated there, is when the forest structure is changed through timber management activities, then the capacity of the forest to provide the joint products is affected, so it affects capacity to provide timber and and the non-timber products.

And as we'll stressing I think throughout

our evidence, if you focus too much on one or the other, you lose sight of the fact that really you're dealing with joint products and that a comprehensive analysis has to cope with both together.

I want to make a few comments about how we measure economic value and I'll start with the economic value of timber.

Let me just say that within the framework of economics value is a relative concept. Economists generally are very uncomfortable with notions of absolute value. Even intrinsic values sometimes present problems for economists. To an economist value is something that people assign to something and it's relative because we talk about it in terms of the value of something is measured in terms of something else. We don't have an absolute measure of value.

So the value -- take my earlier example, the value of a cup would be to the person concerned with it, the value to them in terms of other things. So if they're prepared to give up a note pad for the cup, then we will say the cup is worth at least the note pad. It's relative.

Now, because we live in a market economy we can use price as the common denominator, we can use money as the common denominator, it gives us a measure,

but always in relative terms. We don't value things because people value the money, we value things in monetary terms because people value lots of different things, and the market mechanism more or less balances out these relative values.

Now, when we come to timber, in situations where the timber is bought and sold, its economic value is generally taken to be measured by its price, it shows what people are prepared to pay for it. We can distinguish for convenience sake between the gross value of the timber and its net value. The gross value would be what was paid, and the net value is the difference between what is paid and the cost of obtaining it. And these costs, as the slide says, include costs of access, harvesting, transportation, site preparation, regeneration, tending and protection.

So, for example, if a sawmill could have a piece of timber delivered to it without having to incur any of those costs, it would assign a value to that piece of timber as delivered, let's say $10 a cubic metre. That is the gross value.

If it didn't have to pay any cost, if suddenly the timber just arrived cost free, that would also be the net value but, as we are all aware, costs have to be incurred to deliver timber to a mill. When

we take out those costs, as I've listed there, you have the net value.

Now, in the case which is quite common in Ontario, as we know, when timber is not bought and sold on an open market we can still find ways of estimating its economic value, and one of the ways of doing that - which I want to turn to - is to take the value of a product and extract from it all of the costs that went into it and we'll be left with the one that we don't have number for, the one we're looking for, which is the value of the timber.

And if you turn to my next slide you see an example of where that's been done in a study that was performed the Ministry of Industry, Trade and Technology. I believe we have that study that we would like to enter as an exhibit at this point.

MS. SWENARCHUK: Madam Chair, portions of this study was filed with Drs. Mueller and Morrison's evidence. I'm not sure how much of it was. I could check that, if you want to give this an exhibit number. It may have been just reference to the materials.

MADAM CHAIR: Mr. Pascoe, can you check the exhibits list for that. Thank you.

Well, you don't think the entire study was exhibited; do you, Ms. Swenarchuk?

MS. SWENARCHUK: No, it wasn't, Madam Chair. And, in fact, I think the entire study is about four or five volumes, and I believe this volume is not one that we filed.

MADAM CHAIR: All right, then, why don't we give this a separate exhibit number and we will make note of a previous exhibit that included some of this material. This will be Exhibit 2114.

And exactly which volume is this, Dr. Victor, do you happen to know?

DR. VICTOR: Do you have the full reference on that?

MS. SWENARCHUK: Each volume has a separate title, Madam Chair, so I believe it's safe to use this title for this exhibit, that will identify it accurately.

MADAM CHAIR: All right. The title of Exhibit 2114 is Timber Values, Stumpage and the 15 per cent Export Tax, A Report Prepared for the Industrial Restructuring Commission by Quirin and Waters dated September 29th, 1989.

And this appears to have at least 80 pages and a series of figures and tables following that.

---EXHIBIT NO. 2114: 80-page report entitled: Timber Values, Stumpage and the 15 per cent Export Tax, A Report Prepared for the Industrial Restructuring Commission by Quirin and Waters dated September 29th, 1989.

MADAM CHAIR: Dr. Victor.

DR. VICTOR: Yes. What this slides shows is that the value of lumber as measured by its selling price, that's in other words after the timber has been brought to the sawmill and processed, this is the price that's paid for it as it leaves the sawmill. Its priced as of the year for which this data was put together was $165.26 per cubic metre.

Now, that is an average price, it's not necessarily the price that any individual mill received, it's the average price that is reported by public information that Statistics Canada makes available which, as Messrs. Quirin and Waters point out, is the source of, I believe, all of the information that's in this slide.

Now, what they then did - and I'm reporting on their work - was then start subtracting from this selling price the amounts paid for the various components in the production process. So there's the labour costs, which include both labour within the mill and labour in the woods, then there is

the materials costs for any energy and other materials that were used. The third item is capital services. These mills represent a commitment to capital and capital also requires its return and that has been estimated and included there, and then the final item that is shown shaded in is the transportation costs to transport the timber from the woods to the mill. And finally, then, you're left with the residual, which is the value of the wood estimated at $6.93 per cubic metre.

Now, at the bottom of this slide I've just written out the calculation, if you like. We start with the revenue that's attained from sales, what went into the whole process was the wood which is at bottom here, and what's inbetween is what we call added value. These other activities add value to the timber until it reaches it market price as represented by revenue.

So this is a way of estimating the economic value of the timber even when there's no actual market in timber and you can't say how much it's being traded at.

I should have said at the beginning that, of course, you know, I would like you to ask any questions as we go along if there are things that

require explanation because some of these issues can be a bit unclear and unusual, even though us economists sort of deal with them all the time. So if there are questions now or at any time, please, I welcome then.

MR. O'LEARY: Q. Could I ask one.

Dr. Victor, could I ask you if it was competitive market, what conclusions could we draw or what could we deduce from this particular slide?

DR. VICTOR: A. Well, what this slide shows us is that if it was a competitive market, as you say, the maximum that, on average, the mills would pay for the wood if they had to buy the wood is $6.93. You see, if they had to pay more than that, if they had to pay to $10 a cubic metre, the revenue they could get from selling the processed wood would be insufficient to cover all their costs.

Now, in some circumstances the manufacturer of a product has some control over the price at which it's sold, if costs go up, just increase the prices. So everything then depends upon the structure of the market within which the operation is taking place.

If you're talking about an individual operation in the sawmilling business that in no way has the market power to set the price - it's a price taker

as we would say - then if the amount it had to pay for the wood exceeded this calculated value of the wood, it would be operating at a loss and would go out of business.

Q. Well, how do the transportation and material aspects such as harvesting, how would they relate into this particular example?

A. Well, all of the costs for harvesting and for processing within the mill are included in here. I haven't given -- as I said, the labour costs are, in Quirin's original document, broken down by labour in the woods and labour in the mill. So all of the costs of harvesting and processing that are necessary for adding value to the raw timber before it becomes a salable product at $165 per cubic metre are included.

There are a number of ways that economists have of working with diagrams of this sort and maybe it will help you understand how this -- what is being said here if I just expand on this a little more.

For example, this is, as I said, is the average case, but if you have a mill for which the transportation costs are particularly high, maybe its sources of wood are higher than average, and its

transportation costs would be greater than the $9.92 as shown here, the greater they become, the more remote they have to go for the wood, the lower becomes this value of the wood, because as this portion goes up, the value of the wood has got to shrink because it can't do anything about the market price.

So there comes a point, measured in terms of distance - we call this the extensive margin for a mill's operation - beyond which it just doesn't pay the mill to harvest wood. And the same with the intensive margin - which refers to the operations of the mill per se - if the costs of materials goes up, for example, there's a limit beyond which, if it goes up, the wood will have no economic value to the mill because it can't take the wood and convert it into a product that they can sell at a profit.

Now, Quirin and Waters did the same --

MR. MARTEL: Can I ask you a question, Doctor?

DR. VICTOR: Yes.

MR. MARTEL: While you look at the value of the wood - and this as an average case is relatively small - how do you measure that against everything else that goes on in an area however, because that value for the wood itself might appear relatively small, what it

does for the economy of an area is far greater than that shows.

DR. VICTOR: Well, I think perhaps what you're getting at is to convert this wood to a marketable product over $65 per cubic metre is spent on labour. So there are, of course, jobs involved in transforming the timber into a marketable product, that's certainly true.

But the way we would look at that generally is that labour has alternative uses, alternative ways it can be employed.

MR. MARTEL: Well, we might have an argument on that, Doctor.

Based on coming from northern Ontario, as you're well aware, I might argue rather vociferously in a different situation than here, but you can't exclude that though; can you, you can't just simply put that value of wood figure up and say that's it, $6.93, it's hardly worthwhile doing.

DR. VICTOR: Okay.

MR. MARTEL: In terms of the value of the wood by itself, I understand that, but...

DR. VICTOR: I would never say it's hardly worthwhile doing it. That's not the message that this graphic is supposed to convey.

Now, I'm sorry if that's the conclusion you draw, I'm not trying to diminish the value of the wood by pointing out its economic value within the larger framework.

MR. MARTEL: You're looking at it in the overall though, in the larger picture.

DR. VICTOR: I'm saying that the value of the product this ultimately produces is worth $165 to people, that's what they'll pay for it. Now, that $165 doesn't all come from the wood, it comes from all of the resources of society that go into producing the wood, that includes labour and capital and it includes the value of the wood.

MR. MARTEL: Okay.

DR. VICTOR: Now, the problem we have is that if we try to argue ourselves into a position that says, no, the value of the wood has got to be more than $6.93, you've got to then say: Well, the value of something else is lower, because the market is telling us that the value of the product is $165.

But I would like to just come back to the point you were getting at, and I had only reached a comma in my multiple stops.

You're quite right, if the labour could not readily find alternative employment, then what is

shown here as a cost $64.97, we would not, in the course of our economic assessment, count that as cost because it's only a cost if it actually represents the value of what the labour could produce if it was alternatively employed. If it couldn't alternatively be employed, we wouldn't count this labour as a cost.

MR. MARTEL: But you see that's the difficulty I had at least on the last round of evidence with Forests for Tomorrow, because I think suggestions were made that we would buy -- you know, government could buy the house and relocate people, but that's not the real world, or we had more money for health and we had more money for education. That's wonderful too, except if you live in northern Ontario and you're out of a job, because (a) we know that government isn't going to buy the houses or pay for them, and if that's new it's certainly, as of two minutes from now, that that will happen, that governments will pay for the houses, and coming from the north, one realizes that there's one ghost town after another in northern Ontario and labour walked away from those houses and lost their shirt.

DR. VICTOR: Yes.

MR. MARTEL: And there was no government paying for it, and there was no government paying more

for health services, except that people got sick and went to the hospital because the thing closed down.

So the difficulty I start to get into with the theory that that's not the real world and that's not what's happening.

DR. VICTOR: I think this is where a decent theory can help.

MR. MARTEL: Okay.

DR. VICTOR: Now, maybe what you're worried about is whether you have here before you an indecent theory, but working together with Dr. Kubursi --

MR. MARTEL: No, but the theory in the real world, I have to look at them both.

MR. VICTOR: But if our theory does not correspond with the real world, it's the theory that's wrong. The real world is the real world. And that's always the challenge of theorists.

The test of our theory is: How well does it correspond to the real world, not how elegant is the theory, not how nicely the mathematics work out, but how good a picture, how good an understanding does it give you of the world.

Now, the kinds of issues that you're raising here are very much concerned with what we call

impact. If you -- for example, to prevent logging in an area so that a mill closed and it caused all of the kinds of distress that you're talking about, we believe that you need to have a good understanding of those impacts, that you need to quantify them, you need to know, are you talking about one person being displaced without a job or 10, or a hundred, and this is exactly the kind of information, that Dr. Kubursi rather than myself will be able to explain to you, that we're capable of producing.

So there's no disagreement here at all that that dimension of the problem is very, very important for policy.

What I'm trying to do here is to explain how we would value the wood in terms of its alternative uses. Now -- I mean, how much is it worth to spending to get $6 worth of wood; is it worth spending $50 to produce wood, which we will have to sell to a mill for $6.93, because if we sell it for more than that they'll go out of business.

Well, we can have an argument: Is it worth spending $50 or a hundred dollars or whatever, see it's at that point that an economist says: Well look, hold it, if we spend $50 to deliver wood that the market says is only worth $6.93 maybe there's a better

way of spending that money.

Now, what Professor Kubursi will show is that if you spend it on getting the wood you'll get these kinds of impacts but if you spend it on other activities you'll get a different kind of impact. Only if you've laid out the different impacts can anybody make a choice as to which way to go.

MR. MARTEL: All right. We're going to get from you and Dr. Kubursi then a range, because it's something we haven't got yet at this hearing, what the effects might be of certain actions.

We've been trying to get some of those statements and, quite frankly, I think we're still waiting for an economic statement on the cost of the two processes as of April 26th last year, the cost of the two operations, or the major operations in forestry.

And we're still waiting for material with respect to tourism and we're down to only two panels - one panel after this one - and we're still waiting for that sort of, not concrete cast in stone figures, but some economic value in terms with which you can make a decision about.

DR. VICTOR: Yes. Well, we will certainly do the best we can to help you with that. I

should underline though that the major thrust of our evidence is to try to demonstrate that there are methods for answering those questions.

Now, that doesn't mean that we've gone ourselves and done all of the analyses that you would want, particularly in the context of a timber management plan, I mean, that's just way beyond anything that we're capable of doing without the authority for that, without the decision already being made that that's how it's to be done.

But we can, I think, persuade you that the methodologies that we have at our disposal - not just us, that are available now to society at large - are capable of answering those kinds of questions that you're raising.

And part of our strategy for trying to persuade you of that is to bring forward examples where it's been done, which I will do with respect to relative values, timber values versus non-timber values, and Professor Kubursi will do with respect to impacts of different decisions on the economy, measured in terms of employment and taxes and production.

And it's only by putting both of those sets of information forward for various alternatives that we believe a sensible decision can be made as to

the way to go. So we will try and do it for you.

MR. MARTEL: We may have a lengthy dialogue, all right.

DR. VICTOR: No, that's fine. Okay. I will continue on this tack, bearing in mind the questions you've raised about, I suppose, how would you use these numbers.

MR. MARTEL: Yes.

DR. VICTOR: These numbers are not the whole story on the role that timber plays in a society, to get to that you've got to look at impacts, but to look at whether it's worth spending, as I was saying before, 50 or a hundred dollars to provide wood that the market says is only worth 6 or $7, that's really what I'm going to get at here.

Now, what the Quirin and Waters study suggests is the following, and again this is all taken directly from their work. They're saying, in directly the way I explained to you before, that to the private operator, to the company running the mill, on average the wood is worth $6.93 per cubic metre. That's the net value after all the other costs have been netted out.

Quirin and Waters report that on average the Ministry of Natural Resources spends nearly $12.50

to make that wood available and the observation, therefore, is that on the one hand you've got the Ministry spending nearly $12.50 - again on average and these are average figures - to produce something that the market says on average is only worth less than $7, and so you get what appears to be a social loss of $5.54 cents per cubic metre.

Now, I hear your point, I accept the point that within a broader decision-making context one could conclude that's money well spent, that is money well spent, that it's worth spending this, money despite this net social loss because we attach other significance to development in the north, but what I would say to you is that it's important to know how much we're spending and it's important to ask the question: Could that money be spent in alternative ways that might be even more beneficial.

MR. MARTEL: Could I ask you a question then. That $5.54, that net social loss, is the money to government. How does that take into consideration, or does it, that all of the other monies, either raised or spent and paid to labour and labour, by virtue of working in a specific place, buys a snowmobile, buys gas, or is this just strictly at this stage of the game in your presentation, just what it's costing the state

in terms per cubic metre to produce, $5.54, or are all the other factors factored in?

DR. VICTOR: Yes, they're all factored in. Now, I've got to try to explain that. The though interpretation I would like you to give to the $6.93 is that that is all that the mill will pay for the wood if it was left to its own devices. If you said you've got to pay $7, $8, they would say, no way, we'll close.

MR. MARTEL: Okay.

DR. VICTOR: Now -- so that's one number we've got. Now, the Ministry of Natural Resources also has to spend money to see that that wood is available through all of its activities. Now, what we're faced with, therefore, is on the one hand the mill saying that the wood is worth $6.93 to them, me and the Ministry saying, and we're spending $12 to provide it to you. Now, that immediately raises some questions which we've begun to touch on.

But the one you're asking is: What about all the money that went to labour, and because we saw before there was something like $60 that went to labour to pay their wages, and that money is going to get spent on snowmobiles and this and that doing some good in the economy, and that's where I've agreed with you, that's a dimension that has to be considered and that's

exactly the way we tie the valuation issues to the impact issues. It's not either/or, it's you've got to look at both.

This set of numbers that I'm giving you suggests that we are committing $12.50 of society's resources to produce something that society, through the market, is saying is only worth $6.93.

I grant that when you lay it all out, look at all the impacts you may that think that's a very good way to spend the money, but I wouldn't assume it's a good way and I wouldn't say there's no better way, I would say: Let's look at alternatives and find out if there's a better way. And that's the thrust of our evidence.

So coming to the bottom half of this slide is the same calculation using, according to Quirin and Waters' less reliable data but the best they could find, it's the same calculation for pulpwood, and here the value of wood used for manufacturing pulp exceeds that for MNR's expenditures.

I see there are some brackets here which shouldn't be here. If I could just ask you to delete those brackets around the $13.86, looks like I was trying to show a loss. So in both cases this middle number is just the difference between these two. So

it's $26.63 minus $12.47 which gives you $13.86.

Well, this is all that I want to say at this point about how to estimate the economic value of timber.

MR. O'LEARY: Q. Could I ask you, Dr. Victor, are there any non-timber values included in the estimates that you've -- cost of non-timber values?

DR. VICTOR: A. No, at least the methodology that Quirin and Waters used for estimating these expenditures by the Ministry of Natural Resources was that they said, only a portion of these expenditures by the Ministry, such as on roads, could really be assigned to timber, some of it's going to recreation.

Now, I said at the outset of my presentation that separating out the costs when you're dealing with joint products is difficult, it tends to be sort of arbitrary; pick 25 per cent, pick 30 per cent, I can't remember below what percentage they assigned to recreation.

So that's why my answer is a little convoluted. So Quirin and Waters certainly attempted to take out of MNR's expenditures any expenditures to do with non-timber values, they made the attempt.

The point I've reached now is that I've

tried to show how we can estimate the value of wood as timber. The result, not surprisingly, is expressed in terms of dollars. People are accustomed to valuing timber in terms of dollars because it ultimately finds its way into products which are measured in terms of dollars.

The next part of the presentation concerns methods for estimating non-timber values in terms of dollars so that a comparison can be made. And here, again, I'll underline the point I feel needs to be made very clearly: The comparison of timber values and non-timber values in the way that we'll be exploring is only part of the story, you also have to look at the economic impacts: effects on employment, effects on location, effects on housing, all of those things depending upon whether any particular plan would stress timber production or recreational production, whatever.

So it's not that I'm not cognizant of that dimension of the problem, we're a team, and Dr. Kubursi will be concentrating much more on the impacts, I'm concentrating on one part of the picture which is the relative values measured in terms - I have to say - of what people would pay for the products. There's something that people will pay for timber, there's

something that people will pay for recreation, and it's a comparison of those kinds of measures that we'll be looking at.

MR. O'LEARY: Now might be an appropriate time to break, Madam Chair.

MADAM CHAIR: We usually break for lunch at twelve, Dr. Victor.

Ms. Swenarchuk?

MS. SWENARCHUK: Yes. The FFT exhibit which includes excerpts from Exhibit 2114 is Exhibit 1697.

MADAM CHAIR: Thank you very much. We will be back at 1:30.

---Luncheon recess at 12:00 p.m.

---On resuming at 1:30 p.m.

MADAM CHAIR: Please be seated.

DR. VICTOR: Madam Chairman, Mr. Martel, I'm just going to go back to the overhead that we spent some time discussing because I think that there's an issue here that I haven't adequately addressed and I would like to take a moment to do so and, again, it comes back to the question of: Is the wood really only worth $6.93.

Now, one of the questions that Mr. Martel raised, I believe, was that if the mill or if a mill

closes the labour may have no alternative source of employment, or at least not readily available to it, and I think what I would need to point out is that we can take account of that factor within this framework to interpret the value of the wood.

And the way we would do this is as follows: If the wages that are shown here do not, in fact, represent foregone output, meaning that if the people weren't working there they would be producing something else - they don't represent that because, in fact, they would be unemployed - then the real cost, if you like, to society of producing the product is not a cost of $64.97; in other words, we're not having to give up $64.97 of some other output if these people would not actually be producing that other output.

We deal with that through a term we call shadow pricing. We would say: Okay, in this particular case the market price, the wage rate, does not accurately reflect the foregone output that's involved when people are in this line of activity. It could be a lot lower and the limit, it could be zero; in other words, if there was no other occupation these people would be undertaking so that, in fact, nothing is being given up to produce this product in terms of the labour that's here, and that the cost to society of having

labour in this activity is really zero or close to it then, of course, what happens is that the price of the product, the value of the product doesn't change, the value of the wood which is calculated as residual gets much bigger.

So you would say - if I can put it in slightly different words - now we can produce a product worth $165.26. We do have to use labour to do it, but that labour, if it would otherwise be unemployed, does not represent a real cost to society because we're not having to give up anything.

MR. MARTEL: Can I stop you there.

DR. VICTOR: Yes.

MR. MARTEL: Can I stop you there. But that cost of that labour does show up somewhere though, because if they're not drawing an income somebody is supporting them if they don't have a job, and that someone is government either through unemployment insurance or welfare, so the cost to society is even here because you don't have the income from their tax or the costs to work, in terms of unemployment insurance or taxes for welfare, so the cost to society - and I'm not an economist - continues to escalate because somehow you have to support that group that's shown by that 64.97, and how would you show

that -- where would you show that, I mean, it comes from somewhere, I mean.

DR. VICTOR: Yes. No, it's a valid point and the way we look at that is as follows, and I'm going to try now to make a distinction that we believe from an economics point of view is valid but not everybody necessarily does, but I think it is a valid one.

If you have somebody who's receiving unemployment benefits they themselves, by virtue of the case, are not producing anything, they're the recipient of the unemployment benefits, so they gain by that amount, somebody else or some set of taxpayers is losing by the same amount. It's a transfer.

MR. MARTEL: Right.

DR. VICTOR: So that's the way we would look at that. Now, I'm not saying whether it's a good transfer or a bad transfer but it is a transfer, you're taking from one person giving to another. So that's one situation.

The situation that we're faced with here, if this labour would be otherwise employed, okay, then by paying the labour $165 to work here, we are giving up some other output. Okay.

MR. MARTEL: Right.

DR. VICTOR: Now, what I'm saying is, when I interpreted this diagram for you the first time that was, if you like, the assumption that was being made, that the labour would have some other kind of employment, therefore, you subtract it from the value of the product and you end up with a low value for the wood.

If, however, the labour wouldn't be otherwise employed so that you're not giving up anything by having them work here, then the value of the wood through this kind of calculation would look a lot bigger and that's a perfectly valid conclusion to come to.

And, if you like, can begin to make sense of the fact that government is putting $12.50 into something which, at first sight, looks like it's only worth $ 6.93 but may be worth considerably more, because what you're able to do is to convert wood into something of very high value without giving up other things in the process.

I'm making this point for two reasons: I didn't present these numbers because I wanted the numbers themselves to convey a particular message, what I'm doing is saying to you, even when timber is not bought and sold in the market we can, nevertheless,

calculate this economic value through this kind of approach.

Now, what its value will actually be in any specific circumstance does take us into these kinds of issues: Would were these resources otherwise employed or not, then you get a different answer, depending on the situation.

So it's just a reminder to myself, to us all in a way, if this kind of approach is used for comparing a timber value with a non-timber value, we can estimate economic value of timber, but it has to be done with due care being given to such considerations that I've now been discussing.

So that's not to say that the whole set of impact issues that I said are also out there to be dealt with don't have to be considered. You don't get all by re-interpreting the cost of labour, you still have to say, if the labour is paid and works here and is - even though no other output is being given up - is that the best arrangement. It might be that some alternative use of the resource still comes out looking better, but we can't conclude that just by looking at one set of numbers.

MR. MARTEL: Can I ask a further question then. Let's go beyond labour.

DR. VICTOR: Yes.

MR. MARTEL: When one looks at materials, capital services, transportation, and out of that $165 roughly 159 of it, all of these other factors that one can't escape, can't ignore, they have to be taken into the calculation, as I understand it, when one looks at whether you want to call it value or anything, but that whole set of factors really start to play a very significant role when just compared to the cost of the wood if you looked at it by itself--

DR. VICTOR: Yes.

MR. MARTEL: --and the 6.93, of course it looks out of place when one considers a cubic metre of wood, except that then one says: We have to weigh all these other things though in determining what one does in a place like northern Ontario.

DR. VICTOR: Well, you're absolutely right, the same issue arises in respect to all of the other inputs, you have to ask: Is the market price a proper measure of the value of what's being foregone. I know that sounds complicated but that's how -- you know, it's opportunity cost approach.

One might argue that the energy that is used in here, if it wasn't used here could be used somewhere else, or to be generated. We wouldn't look

at the cost of generating. That could be interpreted as a real cost.

Capital may be different. If you've got a sawmill that's built -- though economists sometimes like to think that capital is infinitely mobile, can somehow be converted into something else very easily, often that's not the case; if it's not used as a sawmill it may have no alternative value at all.

Again you would calculate a shadow price, an alternative dollar value for those services too, and each time they get small smaller the implicit value of the wood is going to get larger.

DR. KUBURSI: May I just say -- add one thing. But nonetheless. The mill would pay no more than $6.93 under any of the evaluations.

MR. MARTEL: Right.

DR. KUBURSI: If the stumpage fee was a little bit higher than that, they won't pick it.

MR. MARTEL: If the stumpage fees...

DR. KUBURSI: Was a little higher than 6.93, they won't pick this wood, it won't be worth it for them.

DR. VICTOR: See, the mill has to pay wages.

DR. KUBURSI: No matter what way we look

at it from the other side.

MR. MARTEL: But don't forget the 6.93, even in itself when you have, I think, somewhat of a captive market up there, that there are four or five large producers who dictate the price, that if there were more people in the field -- I mean, they employ right from top to bottom in many of those industries, they have the woodworkers who cut the wood, they employ the people who haul -- who do the trucking.

One can juggle the books a little bit if one wants to show whether the value of the wood is really only 6.93 or what you would put it on, you could in fact influence that significant -- I think Dr. Henry (sic) said that this morning that, in fact, they don't -- the smaller operations don't influence the cost of wood.

I mean, if you only had -- I mean, the cost that comes to there can in many ways be determined by the number of players in the game and those with the power to determine what they're prepared to pay out in the bush and what they're prepared to pay for wood when it enters the mill and that's a factor, I'm not sure that that's taken into this model.

DR. VICTOR: Well, it can be, you know, this was starting to tell quite a complicated story

here.

But the way I presented it earlier was to work with the assumption that the mill can't do anything about this price, the $165, because it's selling its output, its lumber in a competitive market. That was the assumption I was making.

To the extent that's not true, again, one would have to build that factor in. But once that price is given, then I think what Dr. Kubursi has just reminding me and reminding us, is that even if the labour has no alternative use and, therefore, really its use represents no economic cost, the company still has to pay the wages, still has to pay for all the other items and, having paid all of that out of the $165, the most it could pay for the wood, as a stumpage fee for example, would be $6.93.

So if stumpage fees went above that the mill would have no option but to go out of business, just could not pay its way unless it could find a way of increasing the price it sold its product at or getting lower prices or paying less for the other inputs.

So I think the view I would like to leave you with on this matter is that, as I say, we can make estimates of the value of wood when it's not sold

through a market; that in doing that you have to look at the situation you're working in, whether the resources have alternative uses or not, and then you can come up with an answer.

And I'm only putting this forward really because it's sort of on the one hand the timber values, the main thrust of my evidence, the other hand, the non-timber values; having done this kind of calculation for timber values, now we've got to see what can we do with respect to the non-timber values.

And that's where I'll I'll turn to now.

MR. MARTEL: I think I gave you a new name a few minutes ago; didn't I. It just dawned on me.

DR. VICTOR: What I propose to do is to discuss for a short time some of the underlying principles and then to go into some of the analysis that we do in order to implement these principles.

So first I'll make some comments on the meaning of economic value. I said this morning that economic value is regarded as a relative term, the value of something is always measured in terms of something else.

We are faced, therefore, with two ways of making the comparison: We can talk about the first one

which is people's willingness to pay to obtain something that they don't have or to retain something they already have, that is one way of putting an economic value on something which doesn't automatically have one because it's not traded in the market. Alternatively, we can look at what people would be willing to accept to forego something that they already have.

Now, in a normal market transaction when you have a buyer and a seller both things are brought into equality and what the buyer is willing to pay has to be equal to what the seller is willing to accept. If that's wasn't the case they wouldn't make a trade. So willingness to pay or willingness to accept are brought into equality by and large in normal trades.

When we move into the area of things that are not normally traded such as access to a recreational area, improved quality of the air, any of these kinds of environmental values, it turns out that when you try to estimate their economic value you get a somewhat different answer if you try to find out what people are willing to pay for something that they don't have or what they would accept for something that they might have to give up.

Now, for a long time economists argued

that there really shouldn't be this big difference, these things should be very similar, and I think that's partly because they were used to the result that you get from a normal trading situation, but it's now clear that study after study has shown that often these two can be quite different.

And so in a practical application when you say: Okay, we're going to estimate the economic value of a non-timber value, the decision as to which concept to use, willingness to pay or willingness to accept, can be very important, particularly so when what you're valuing is unusual or unique. The more special the circumstance, the more you find the difference between willingness to pay and willingness to accept becomes.

So, for example, if you have, say, a special stand of old growth timber, there's none like it maybe nowhere else or for a very long, long way away, then you find that willingness to pay to preserve it will tend to be less than you would find if you asked people: What would we have to give you to willingly see it chopped down.

If, however, you're valuing something for which there are many, many close substitutes, then you don't find that difference to anything like the same

extent.

Now, what I would recommend, and a lot of other economists take the same position on this matter, is that if we're going to value something that people don't necessarily have a right to, then we would use willingness to pay. So if you were valuing the establishment of a new recreational area, the question you ask is: What will people be willing to pay to get the recreational area, rather than: What would we have to pay people not to want the recreational area.

However, if you're valuing the loss of something that people are presumed to have a right to, so if you're valuing the loss of an existing recreational area, then the willingness to accept seems to be the concept of choice.

The methodologies that are available to us for estimating non-timber values can generally be classified into these two categories: Those which are market based, by which I mean we can observe people's behaviour and interpret from their behaviour the value that they are attaching to something that they're not actually buying, and that's one category of methodologies; the second is, we just ask people through a questionnaire, we say: What would you be willing to pay for something, or what would you require

in compensation to forego something.

Now when I say we simply asked them, the experience with the questionnaire approach now goes back 30 years. I can think of a study that is 30 years old, and a great deal has been learned about how to construct such questionaires so that we can have some confidence in the reliability of the responses, and that is something that I will get into a little later.

My main point now though is that we're now faced with two categories of methodologies: One where we'll say a classic example is through the travel behaviour of people, see where people travel to, we can see they spend money to travel to different recreational sites and after a while in a little while we can interpret that behaviour and work out the value that they must be attaching to the site. That's one kind of approach.

The hedonic approach, as I've mentioned there, is somewhat similar. There we would look at classically purchases of different houses. Houses are all sort of different prices, they all have different characteristics and what economists have been able to do is to take the price of the houses and say how much of the price is because of the size of the house, the location of the house, in particular, the air quality

surrounding the house. That's the hedonic method, where you decompose prices into the different components.

Okay. Let me get a little more specific and show you an example of the travel cost method. Now, I've chosen to go through a simple example because I think it is a pretty simple methodology to understand. In application it can get a little more complicated, but the basic idea is a simple one.

I would like to just say that the original idea for this method of looking at travel costs for valuing recreational experiences came from an economist called Harold Hotelling who in the late 40s was asked by, I believe the U.S. Forestry Service, to help them with this very issue; and, that is, as recreation is becoming more important, how do we value it, how do we find a way of valuing it so we can compare with the other uses of forestry sites.

And he wrote what was nothing more than a letter. He said: Well, people come to these sites from very many different areas, they all therefore have to pay different travel costs, maybe there's a way of interpreting the differences in travel costs so that we can estimate, in economic terms, the demand for the site, and he outlined the methods and subsequently

people have refined it.

So let us take an example. Here we have a recreation site, this could be any location, but the example is brought up for a recreation site and we can put zones around it, people live in the space around the recreation site.

There is certain information that's relatively easy to come by. First of all, the population in each zone, and you'll see that that's tabulated here, and these are hypothetical numbers in the first column. So Zone 1 has a population of 50,000, Zone 2 a hundred thousand and so on.

We can also find out relatively easily how many people from each zone visit the site, say, in the period of a year, and that's tabulated in this column. So Zone 1 shows that there were 10,000 visitors to this site from Zone 1; there were 15,000 visitors from Zone 2; and 4,500 visitors from Zone 3.

But the third piece of information that we can get is the travel cost, we can find out what it costs to visit the site from each zone. And the reason why these costs are different is simply a question of the fact that if you come from Zone 3 you've got to travel further.

This assumes of course that once you get

there you don't have to pay to go in, and that's why we're having to go through this method of analysing travel costs because we don't have the normal information you would have in a market. What we do have though is the fact that people do pay different sums of money to get to the site.

Now, what do we do with that information. First of all, we calculate these participation rates. That simply means that for Zone 1 they made 10,000 visits, there were 50,000 people, we specify participation rate of 20 per cent.

For Zone 2, which is further away and more costly, we find the participation rate is lower, and similarly for Zone 3.

What we now do is we take these two columns of information, travel cost and the participation rate, and we draw this simple graph which is shown down here.

So, for example, for Zone 1 the participation rate is 20 per cent and the travel cost is $10, and that's just shown by this point. Zone 2, the travel cost is $15 dollars and the participation rate is 20 per cent, and the same for Zone 3 where the participation rate is 7 1/2 per cent and the travel cost is $35. So just plotted those points and run a

line through them. In practice you would work with more information and you wouldn't get such a well fitted straight line, but you would get something close to that.

Now, the way we use this graph here is to say: Well now we can predict the participation rate based on differences in costs. So we introduce a hypothetical entrance fee to the park, $5.

Now, what this means for people from Zone 1, if they had to pay $5 to enter the park, they'd have to pay the travel cost, which is $10 plus the $5 entrance fee, so they would now have to pay $15 and we can come down to the graph and say at $15 - whoops, wrong point - at $15 here, the participation rate would be 17 1/2 per cent and that's what's written there

I'll just say that again. We know what their travel costs are. We now say if, in addition, they had to pay a $5 entrance fee, it would now cost them not $10 to go to the park but $15, dollars.

And then we look down at this relationship between costs and participation rate and estimate what their participation rate would be under that circumstance, and we do exactly the same for the two other zones.

So now we have a new list of actual

numbers of participants based on participation rate, we know the population of people in the zones, so we can calculate what the number of participants would be if the entrance fee was $5.

We're almost there. The last step is to take that information and say: Well, at $5 - here's the hypothetical price over here - the total number of visits would be 24,250, and you mark that point on our demand curve. We know when the price was zero the total number of participants was nearly 30,000 and that point is marked there.

And the final step is to just do this with other prices. Here I've shown it with a $10 price, this is actually the same kind of logic. Take Zone 1, the travel cost is $10, if they had to pay a hypothetical price of $10 to enter the recreation site they would now have to pay $20 to visit the site.

Come back to this graph, take that $20, we can then find out that their participation rate is 15 per cent, which we write in here. 15 per cent of 50,000 people take part and we get 7,500 visits. Just do that for the other zones and we get a total participation of 19,000 which goes on this graph at $10.

Now, this relationship between the price

of entering, the hypothetical price of entering the and the number of visits is what we commonly refer to in economics as a demand curve. It's the kind of relationship between price and the level of activity. That could be a purchase of cars, purchase of tooth toothpaste, whatever, that economists estimate all the time, it's a very standard term.

What's novel about this - although as I said before it goes back, gosh over 40 years - is that we can estimate a demand curve based upon an analysis of travel costs, and this was Hotelling's idea.

The final thing I want to say before I move on from this diagram is how we interpret this last of the graphs, this demand curve.

What this says is that there are some people that would be willing to pay up to $30 to visit this recreational site. There wouldn't be many of them, just a few people would be prepared to pay $30. Of course those are people who live close to the site and don't have to pay much by the way of travel costs.

There are more people who are willing to pay $20, $15 dollars, that's why the curve slopes downwards. It shows more and more people prepared to pay a lower price. Now, the fact of the matter is nobody has to pay anything to go to this site, so we're

saying that people are willing to pay to go to it if they had no choice - I'm not saying they'd want to do it - if they had no choice, they had to pay or not go at all, this analysis suggests, yes, there's a limit they would pay and they would go, there's limit to that.

So what's happening here is that people are willing to pay for something which actually they don't have to pay for, and we can calculate the area of this space here and that represents the total amount people would be willing to pay to visit the site.

MR. MARTEL: How reliable is that? I mean, it's easy for people to be asked: How much are you willing to pay, and they say: Sure we will pay an extra 20, an extra $30, but how do you measure the accuracy, because what people are willing to pay theoretically and how much they're willing to pay in the real world is quite different.

DR. VICTOR: Yes. That's the beauty of this approach because to implement this approach we didn't have to ask that question. The only information that we needed to do this was we had to know the population in the various zones - that's from census data - we had to know how many people visit the sites from the different zones, so you only have to find out

from people when they visit the site: Where did you come from. You don't ask them how much they are willing to pay, you just say: Where did you come from. And you can either ask people, if you want, how much it cost them to get there, or you can estimate, which is usually the case, how much the travel costs are from the different zones.

So with this method, I mean - and this is clearly one of its advantages over alternative methods - you don't ask the question of people: How much are you willing to pay, you work it out by interpreting information I've put before you.

Because what it allows you to say is somebody from Zone 1 is visiting this site. Imagine the case, they live right next door to it, they just step over the boundary they're in it, absolutely costless for them to go there. Somebody who lives a long way away may pay $50 to make the same trip.

What we're saying is that the person who can visit for nothing, if they had to, would also pay $50. In other words, we're saying the visit --

MR. MARTEL: Because those people who came from far, you can make that --

DR. VICTOR: They're actually paying it, they're actually paying $50 to visit the site.

MR. MARTEL: Yes, from Zone 3 but from Zone 1 where they -- how do you make that quantum leap that says: Well, if people in Zone 3 are prepared to pay it so are the people in Zone 1?

DR. VICTOR: When I say are prepared to pay it, I don't mean if a politician stood up and said: We're now going to charge $50 to come in the people in Zone 1 would be happy about it.

But I'm saying that they're getting something for free which other people are demonstrably prepared to pay for.

MR. MARTEL: Yes, but I could give you a couple of examples. You will recall when we introduced fishing licences there was certainly no willingness to pay, people said they were except when it was introduced into the real world, and the same, even as late as within the last six months, people willing to pay to use Crown land, I mean, they horde it for their only use and the second they have to pay, at the end of 21 days they pick up their marbles and they move on to somewhere else because once you have to start to pay they're not nearly as willing to pay.

DR. VICTOR: Yes, but let me say now how I interpret that issue. There are a number of options we could consider. No. 1 is being allowed to do

something for free, go in for nothing, fish for free; No. 2, is you can pay and you can still fish, all right. I guess I'll just take those two. Which would people prefer? Well, obviously they prefer to fish for nothing, who wouldn't, okay.

But if they were faced with the option of saying - and if it was the only option - you can only fish if you pay, some people are not going to fish, for some people fishing is just such a marginal benefit to them that as soon as they have to pay something, they say: Oh, I'll go to something else; but for other people fishing is very important to them, and if they had no other option but to pay or fish or not fish at all, then they would pay.

Now, that doesn't mean that they would want to do it, that they're out there asking to be able to pay, but I do think they'd be willing to.

MR. MARTEL: But that's the difference, that's what I worry about, because to sit on your front veranda in downtown Toronto and say I'm willing to pay, but actually go out there and pay, is vastly different.

DR. VICTOR: I hear that, but I have to keep coming back to the point that this method has the main strength that it doesn't ask the guy in downtown Toronto what he's willing to pay, what it does, it

says: Are there people from downtown Toronto actually spending $50 to go fishing somewhere, because if they are then they are actually paying to do it.

And all I'm doing is I'm saying, there's some significance in that behaviour. They are actually prepared to pay $50 to go fishing. And somebody else who goes fishinbg without having to pay that, I'm assuming the trip is as valuable to them too, the opportunity to fish is as valuable.

MR. MARTEL: What I can't get my head around then is, how many of those people in a survey, people who say: Well, I'm willing to pay, in fact what percentage of them really wouldn't if they had to, in a survey of my description?

DR. VICTOR: Let me back up a little bit. I said there were two classes of methods.

MR. MARTEL: Right.

DR. VICTOR: One where we interpret observed behaviour, which is this method. The other method is where we ask people.

Now, your concern relates to the second method where we ask people: What are you willing to pay. But in this method we never asked that question. I haven't asked the question: What are you willing to pay and then find myself faced with the problem that

somebody says one thing but, in fact, the truth is something else. The beauty and attraction of this method, as I said, is that you just look at peoples' behaviour, people actually spend money to go fishing, they don't pay to go in, but they pay to get there, they actually do make the payment and that's the information that we work from.

We never asked -- I mean I didn't, as I took you through the steps, said: Now, here's the point where we asked people: What are you willing to pay. Never asked the question. I 'm sorry.

MADAM CHAIR: Go ahead, Dr. Victor.

MR. O'LEARY: Q. Dr. Victor, can I ask you: Does that assume that everyone is necessarily the same? Do you treat them necessarily the same?

DR. VICTOR: A. Yes, in the way I've explained this example because I've just said that people in the different zones would fish with the same frequency if faced with the same cost.

When studies of this sort are done in practice we do bring in socio-economic information and so that we would, if you like, break the whole population up into people of different income groups, different educational levels, maybe different experience and so on and so forth.

So, you know, you don't have to assume that everybody is the same, but for the example at this level of presentation, I made the simplest assumption I could that people in the different zones are the same, and that's what allows me to say if somebody from Zone 1 can fish and pay nothing and somebody in Zone 3 pays $50 to go fishing, then there's an assumption - not unreasonable I would say - that the person in Zone 1 would also be prepared to pay something if not the full $50 to go fishing.

Now, they don't want to pay, they're not going to ask to pay it, they might resist paying it, but nevertheless, if they had no other option but to pay it or not go fishing, we conclude, yes, they'd be prepared to pay it.

I am going to elaborate on this in my next part of my presentation because the problem with this story that I've put before you is it deals with one site and, in reality, we have to deal with multiple sites, people have different choices as to where they go.

However, I am reluctant to move on because I am not confident that you really believe me that I never asked anybody how much they were willing to pay.

MADAM CHAIR: You can go ahead, Dr. Victor, on to slide 10.

MR. MARTEL: I'm going to wait until you come to the next example where --

DR. VICTOR: When we come to those examples where we are looking at questions and responses of that sort, then we can take on that issue.

Well, as I say, this methodology goes back several decades now. Some of the really important developmental work that went into it was done by a Canadian economist, Jack Knetsch, who still is very active out on the west coast, and the methodology has been used in numerous studies primarily to value the recreational experiences.

I myself was involved in one particular study which I'll be saying a little more about in one moment, but this study used the travel cost method for estimating the value of damages that might be caused to sport fishing in the Haliburton/Muskoka region as a result of acid rain.

And what was particularly important on that study is that it dealt with multiple sites, we looked at 232 different lakes simultaneously, and recognized 15 population centres, not just the three that I used in my previous hypothetical example, and we

were able to do the work from published data and come with estimates in losses in value that might come about from sport fishing.

Just to try give this a little more air of reality, I'll just put the map of Ontario there that we work from. The zone in which these lakes are located is shown by the shaded area and in the population centers from all around the province.

And so this very much was a study that was provincial in scope. We recognized that people come from all over the province to take part in recreation fishing in the Haliburton/Muskoka area.

And just to say it as simply as I could, again, the basic data that we had to work from, wanted to work from here was, we wanted to know how many people who took part in recreational fishing in this area how many of them came from the different origins, and how much it cost them to get there. That's the basic information that we worked with, it was not an example of the contingent valuation method where we asked people what value they placed on fishing in this area. This is a travel cost study.

The example that I'm putting before you now is only one level of complexity above the one that I had previously and the only difference is that we

allow for multiple destinations, as we call them - that's shown by these circles - and we have multiple origins - I'm only going to do the analysis here with the two origins A and B, actually we worked with a good 15 origins and many more destinations - but for the purposes of explaining the method, it's quite adequate to think of just these five destinations and the two origins where people live.

A key step in the analysis was to recognize that the lakes fall into various classes that are essentially similar. Two lakes offer the fishermen essentially the same experience. And what I've done here in the example is to classify these two lakes as offering the first type of fishing - we use the term fishing product - but it just means that these two lakes offer, as I say, essentially the same type of fishing experience for people - and then these two also offer the same, and we have out here an inaccessible lake because there's no road to it. I'm going to bring that in a little later.

Now, the people who live, if you like town A, if they want to go fishing for the kind of fishing that's offered in these two lakes, since these are essentially the same they will go to the closer one, it's cheaper.

And we found that it was quite straightforward to demonstrate that relationship when we looked at real data, when we classified these -- when we classified lakes as the same we did find, in fact, that people by and large went to the one that was closer.

But people in destination -- origin A, rather, may also like the kind of fishing that's offered in these two lakes and, again, they'll pick the one that is cheaper for them to get to, that's shown by this straight line here as opposed to the dashed line.

The same thing can be said of the people in origin B, they make their choice as to whether they get the first type of fishing and the second type of fishing.

The data that we put together from other sources is very similar to the data I described to you before in the previous example. We had information on the population in A and B - these are just hypothetical numbers but the real numbers were easy to get - and then we had to get information on the participation rate, it is here expressed as per capita fishing, but the participation rate of people from origin A who are taking part in the kinds of fishing characterized by these lakes.

So for fishing product 1 we have information here which says that 4 people per thousand of the population took part in that kind of fishing, and three people per thousand took part in the second type of fishing.

So the only difference that we had from before is that now we're talking about different kinds of fishing activity which take place at different places. The previous example we just had one recreation site. That's the only difference.

You get the same information for people from origin B, you get their participation rate for fishing for product 1 and their participation rate for fishing for product 2.

We also had to bring in the travel cost information. So for people from origin A here the cheapest way they could get access to fishing product type 1 is to go to this lake, it costs them $60 a day to do that. That's the number that's givn in this example. For people from origin A to go for this kind of product, product 2, it would only cost $40 a day.

Now what's interesting here, because we have got many, many lakes we can say: Well, if this lake here was no longer suitable for fishing, for whatever reason - this particular case study it was

because of acid rain, but one can imagine other reasons why a lake might become unsuitable for a particular type of fishing - then people from here, if they want that kind of fishing, would have to go to this more distant lake, and the cost of doing that is $80 a day. So we found alternate prices for every destination and each type of fishing.

So, again, I'm just going to reinforce this point. This information is assembled, not by asking people what their willingness to pay is, by finding out to what extent they take part in fishing, estimating what it costs for them to take part, and finding out what their participation rate is for the different kinds of fishing at each lake.

And then it's that information which is based upon our observed -- our observations of how people behave that we can use to interpret and estimate the value of recreation.

I'm going to focus on the graphical part of this slide. It's just the same as I showed before, we've got two key pieces of information, people from origin A have to pay $60 a day to go fishing for the first type of fishing, and they go at a rate of 4 per thousand, people from origin B have to pay $30 a day because they live in a different place, geographically

they live closer to different lakes, because it's cheaper for them to go, we find that they go more frequently.

Just like the price of product goes up people buy less; price goes down, they buy more. Just the same result that you find here. The cheaper it is to go fishing, other things equal, the more people are likely to do it. And we find that result simply by looking at the data.

Well, it's a simple matter then to estimate the demand curve, which is this one just like I showed you before, except now this isn't for a particular site as it is for a particular product, because the different people from different destinations are undertaking this kind of fishing at different places.

So here we have the demand curve, and I've adjusted or calibrated it, if you like, for the population from origin 1. If I go back to this previous slide - sorry to jump back and forth like this - but if I go back to this previous slide, then what this shows is that at $60 a day you get a fishing rate of 4 per thousand.

Now, we know that there are 50,000 people in origin A, so if 50,000 people take part at a rate of

4 per thousand, then that means 200 people will be fishing. Actually the unit is angler days. So we get at $60 a day, 200 angler days people from that origin.

So here's the demand function. It tells us that - and this is very important - it tells us how peoples' behaviour, how their participation in fishing for this kind of fishing will vary depending upon what it costs them to do it.

Now, why that is important is because many of the actions that we can imagine, in particular if it was acid rain we were looking at, could eliminate an entire lake and make it more costly for people to get that kind of fishing, and that would be a real cost to people, still want to go fishing, but they're going to have to go further because the lake they were fishing at is no longer suitable.

The concept I'm going to come back to now is the one that I mentioned to you before and, that is, that we interpret this area under this curve here, sometimes referred to as consumer surplus, as the amount people would actually be willing to pay to continue going fishing over and above what they actually do have to pay. That's the benefit to them of this current situation, and if fishing should become more costly, they're going to lose some of that

benefit, or if fishing should become cheaper, they will gain some benefit. And that is exactly the way in which we conducted analysis.

So I'm going to take you now to the very last one of these graphs. This is the situation just -- this demand curve and this cost of fishing for people from origin A is where we started out before.

Now, if a new road is put in somewhere and it provides access to a previously inaccessible area, the one that was marked on my initial diagram with an "x", there was no road to it, and if that now makes it cheaper for people from this origin to go fishing, it falls from 60 to $40, then the total benefit of fishing now has risen by this amount.

This represents, this area, the willingness to pay of these people from origin A for a reduction in the costs of going fishing. In other words, that would be their dollar vote for their new access road.

In the acid rain situation that this was all built upon, we generally worked in the other direction. We were starting at this kind of situation and looking at the situation where lakes were damaged and so the costs of access went up and we would then interpret this as the loss.

Now I realize that this may seem complicated but I can assure you, I think, that this is really an application of the most basic tools of economics, demand and supply, where we use information to estimate the demand for fishing and the supply of fishing, and then look at how there might be changes in the costs of going fishing and interpret the result in really quite a standard way. It's the sort of analysis that -- the tools at any rate, the tools for this analysis, are presented in the very first classes of economics.

So it may look more complicated than it really is. Part of the complication, of course, is removed as familiarity with the tools increases. I say one other point, which I think is very important, particularly in the present context and it's as follows: It comes back to this example with the new access road. Under some circumstances when a new road is put in, yes, you increase access, more people go there, but by their very presence it may change the kind of fishing they thought they were going to get because the lake starts out as being pristine, lots of fish, and lots of people go in there, they may get over fished and it's not the kind of thing that people came for at all.

That's not a problem in the analysis. What it means is that we reclassify a lake and say: Well now, the lake was providing product 1, now it's providing product 2, and you continue with the manipulations.

So this kind of approach is very versatile for dealing with changes in the system, changes in the forest that may enhance or spoil recreational areas. The methodology can be used for estimating peoples' economic value of those changes without the difficulties involved in asking them.

And finally I want to just underline one more fairly significant point; and, that is, that this kind of approach is not just useful for valuing changes, it's also very, very useful for predicting changes in participation rates in recreation.

So in this particular case you see we didn't just say -- I didn't just say that the costs of fishing went down and so people can fish more cheaply, I also, through this approach, predict that more people will go fishing the, number of angler days increases.

Now, that's very important information for all sorts of reasons, not least of which is that if more people are fishing now at the lakes that we can identify, they are spending money there or they may be

spending money there, depending on the recreational activities, and it's through the expenditures of that money that you get an economic impact, you can start stimulating employment in the area and that's, of course, the kind of connection between my work and Professor Kubursi.

So this kind of approach is useful for two things: It's useful for valuing changes so that we can compare different forest structures, different impacts on the forest in terms of recreational values and timber values, but it also helps us compare or make some predictions about the level of involvement that people will have in the area which may require additional provision of additional services and so on.

That's been as much as I'm proposing to say about this travel cost method. I just want to underline that it's based upon observed behaviour and it's based upon usually readily available data, and this approach has been used many, many times in many, many places.

Well, finally in this connection I'm going to just put up a different kind of diagram to illustrate how this sort of method might be used if you're looking at the possibility of expanding a primary access road in an area in different directions.

So in this particular case, this is the FMU boundary, and we have an existing road, some side roads, we have a remote tourist lodge sitting over here, and we have here just shown a couple of possible routes for extending primary access roads into this quadrant, and the question then is: How would you use the methods of economic valuation to compare these alternative access roads.

With all of this kind of work you never leave this just to economists. The underlying -- I'm sure you plan to do that.

MR. MARTEL: I almost broke out in a sweat.

DR. VICTOR: The underlying information that the economist works with comes from the natural sciences, the forester, the ecologist, environmentalist, and that information involves a number of things.

First of all, the important features of of this quadrant have to be identified, and we also have to identify which segments of the public might be most affected by different routes, so that if we have to undertake some new data gathering exercises we know where to focus our efforts.

Then again, not within the realm of

economics, but an important component of the analysis, is an estimate of the physical effects of the two different routes. By that I mean, what changes would either of these routes bring about in the forest structure.

Now, this is an area where I think you've heard evidence on the use of habitat supply analysis as an area where you might use the results of such an analysis to estimate the impact in physical terms, not in dollar terms, of these two alternative routes.

As I explained earlier in my previous example, it's not problematic to add in a new destination in the analysis. Previously this location here, because it's remote, ould not be reached by road. Now building the road there is going to do two things, the two things that I've already mentioned.

One is, it will make access cheaper for some people, you can now drive all the way there, so more people initially will or may go there. I think initially they'd go, however, as the numbers increase, it can change the character of the destination, and of course it can do it to such an extent that in the end very few people end up going there by road on a continous basis if, particularly, the main attraction for the destination was its remoteness.

So this is an example where by putting a road in potentially you can change the kind of recreational activity and recreational attractiveness of the destination.

As I said before, those kinds of changes and how you value them are quite well handled with the travel cost method when we have multiple sites and multiple kinds of recreational experience in the system.

Finally, I would say through this example that once we have predicted the changes in behaviour, whether more people will go there or less people will go there, how the remote tourist lodge owner would fare, that information again can be fed into an impact analysis of the kind that Dr. Kubursi will talk about.

Well, I now want to refer briefly to a number of other studies that have been undertaken using the travel cost method, particularly in relation to timber management, and there really are quite a large number of these studies and this is a few of them from the U.S. which I have identified.

There's a study on the Value of Recreational Steelhead Fishing in Idaho done by Donnelly and others, a Study of the Value of Upland Game Hunting in Idaho by another group, a Study of Big

Game Hunting in Southeast Alaska, another study by Bowes Krutilla on Forest-Based Recreation in the White Mountain National Forest in New Hampshire and Maine.

And, finally, I just want to draw your attention to a study that was very comprehensive in its approach and used the travel cost method, as all of these did, but simultaneously valued 12 types of recreational activities across nine forest service regions in the U.S.

And all of these studies proceeded in much the same way as I've described to you, based upon information only about peoples' participation in recreation and what it actually costs them to participate, and the economist goes to work and interprets that, as I've suggested, as the value of the activity.

Perhaps you could guide me, Madam Chair. Is there a break coming up?

MADAM CHAIR: Yes, Dr. Victor, we like to break about 2:40. Is this a convenient time?

DR. VICTOR: This is --

MR. O'LEARY: Perhaps before we leave that, can I just ask one question.

Q. That is, are these theoretical studies, have they been used in a practical sense?

DR. VICTOR: A. No. All of these studies, Studies 1, 2, 3 and 5, were all used, were all undertaken specifically to generate values that were to be used in forest management, forest management planning.

That's not to, in any way, denigrate study No. 4 which appears in the leading textbook on this topic, and it's a study which the authors did to demonstrate that, at least in the United States, this kind of methodology was quite practical given readily available data.

Q. Can you tell us, Dr. Victor, generally how they have been received by the users of these studies?

A. Yes. As far as I know they have been used very -- they have been received very positively. These values become the best available information for assessing the value of recreation in relation to other services available from the forest.

DR. VICTOR: So let's break there.

MADAM CHAIR: We will take our break now and be back at three o'clock.

---Recess at 2:40 p.m.

---On resuming at 3:00 p.m.

MADAM CHAIR: Please be seated.

Dr. Victor.

DR. VICTOR: Yes. Well, I'm pleased to be able to say that I've really completed what I consider the more technical parts of this presentation, and I now wish to make some further comments on the use of the travel cost method for valuing non-timber values, and then to say something about the questionnaire method.

I've taken these three statements from the studies that I referred to in a previous slide. I think they're each quite interesting. The first says:

"Perhaps the biggest practical disadvantage to the travel cost method is the time it takes to construct a regional travel cost model (10-14 person days)."

As you recall, at the outset I said that what Dr. Kubursi and I wish to talk to you about is the level of effort, the resource requirements to implement the methods that we're talking about.

This quote alone, of course, doesn't tell the whole story, but it's an indication that for a study covering the whole of a particular state the construction of the model took 10 to 14 days, and they thought that was the biggest disadvantage of the method of the study.

And they also comment elsewhere in the paper that of course once the model, the computer model is built for one area it's relatively easy, therefore, to adapt it to others. So they were starting from scratch and didn't take very long at all to construct the model and do the statistical analysis.

The second quote is of a different sort. It says:

"Travel cost regression analysis...", essentially the same as I was talking about,

"...suggests that site quality and hunt site substitutes are important factors in the choice of hunt site. This information is useful to the analysis of potential management alternatives."

This underlines a point I made earlier, that the kind of approach I'm talking about here is not just useful for valuing the alternatives, but because it tells us something about what it is that, in this case, hunters respond to, what site characteristics makes a difference to them, the information can be useful for looking at different management alternatives. So that if we make a certain change in the forest structure, these methods allow us to predict to a certain degree the response that hunters will make

to those changes.

And, thirdly, the third quote says:

"Even if state agencies in general do not have a formal method for incorporating efficiency values...", and that just means the kind of value estimates I've been talking about,

"...into management decisions, economic information can also help all who participate in political decision processes that allocate budgets and develop relevant legislation."

So, in other words, even if we are without a strictly formal method of using this information, Swanson and others make the point that by looking at relative values, non-timber values verus timber values, it can be useful at a sort of more elevated area of decision-making or level of decision-making concerned with budget allocation and even the development of legislation.

The next couple of quotations come from Bowes and Krutilla. I just want to say a word about these two people. Krutilla is one of the real leaders in this field and he produced a paper in 1967 on the economics of conservation and established the whole

direction for research in the area for the next 20 years.

Bowes is a very, very well qualified qualitative economist who collaborated with Krutilla on the book that I took these quotes from and he works for an organization called Resources for the Future which for decades now has been researching into these kinds of issues, how to apply economics to resource base -- to resource questions.

And so those of us in the economics profession attach a particular significance to the views of these authors.

Now, they say that:

"For planning purposes, the travel cost method appears to be the most practical for estimating the demand function for outdoor recreation."

The demand function is just the demand curve that I was pointing you to before.

"Through our review of the data available in the national forest system we have concluded that there are sufficient data to implement the travel cost method--", sorry,

"--the travel cost model to obtain

acceptable results."

Now, clearly that is a conclusion they've reached for the United States, but it nevertheless suggests that information that's gathered on a routine basis within what they call the national forest system in the United States is sufficient for applying the travel cost method in the ways that I've described.

I've included a second quotation from them here because it begins to address the question of the relative magnitude of non-timber values versus timber values, again of course within the context of the United States.

They say that:

"The annual net value of recreation per acre of land dwarfs the value of timber even on the most productive sites. It can be seen that recreation is the largest single source of value in the national forest system amounting to an annual value of around $1.5 to $2-billion compared to less than half that amount for timber."

So, in other words, when they made a comparison in the aggregate of the contribution that the national forest system makes to recreation verus

what it makes to the supply of timber in the United States, they come to this conclusion, that its contribution as a source of value for recreation is very, very large.

At this point I'm going to make an observation that I think is very important. I think you can already see that many of the sources that I've put before you, many of the reference quotes come from work that's done in the United States, and it's quite clear that they are well ahead of us in using these kinds of methods in timber management planning. So it's reasonable to ask the question why, and I think it's a fairly simple question to answer.

Because of their much larger population they, well before us, had to confront the problem that the population wants access to forests for recreational purposes to a very significant extent and that they were then under pressure to develop methods for comparing the values to be given to recreational users of the forest verus timber supply.

The question, therefore, is: Are we now reaching the situation in Ontario that they reached 20, 30 years ago, 40 years ago even, so that now it's really the right thing for us to do to begin to use these methods of evaluation because the issue has

clearly arisen that the forests can be used for recreation and for timber, we've got to find the best balance, and to do that, these kinds of methodologies can be very helpful.

So I'm not saying that in any way we've been delinquent in not doing this in the past, but I'm suggesting that perhaps the time has now been reached that we have to start using these methods to better assess the comparative merits of the different uses of the forest.

MR. MARTEL: Can I ask you if two applies in your opinion to Ontario on page 19? Can you make that extrapolation from what's going on in the States to Ontario at the present?

DR. VICTOR: No, I wouldn't make that extrapolation. I don't think we've reached that situation yet, but I also would say though that that opinion is not based on analysis, I really think the analysis should be done, but I would say, for the reasons I just gave, they've got larger population, they're ahead of us in that respect, but I think what it does is sort of point the direction that we may be moving in.

Now I come to the second main methodology for estimating non-timber values, which has the rather

unattractive title of contingent valuation, and it really means asking people hypothetical questions about how they would value changes in the environment, changes in the forest. Before I get to this slide, however, I want to make a couple of introductory comments.

MR. MARTEL: Are you getting me ready?

DR. VICTOR: No, I think you've got me ready.

DR. VICTOR: Economists have been the most suspicious of all people about the use of this kind of approach. For many years economists, I would say, actively resisted an approach involving actually asking people for valuation in response to questionaires.

There's one particular case that comes to mind, I can't tell you if it's true or if it's hypocriful, but it's a nice story.

Anyway, it's the question that: Well, if you ask people what they're willing to pay but they don't believe they're ever going to have to pay it, well, they'll give a big number. We call that a strategic response, because obviously if it's something they like, they want to preserve a recreational site and they think by giving a big number that's going to

help that come about, then that's what they will do.

And there's one study - as I say, I don't know if it's true but I'll tell the story anyway - of such a survey being conducted and they tried to check in analysing the responses whether anybody had answered strategically in that way.

Now, in the responses they also asked occupation and the story is that there was one case where it was clear that the response was strategic, that it was a total exaggeration, occupation, economist. The economist is the one who plays the strategic game.

Now, since those days - and that was a story I heard about 20 years ago - there's been a great deal of work done on trying to refine this methodology to check for strategic answers, to check whether people are giving what you might call truthful answers, honest answers, to design the questionnaire to bring that about, and to make that happen economists have worked very closely with social pyschologists who really have the expertise in designing questionnaires so that the questionaires that are used in these studies nowadays are really quite refined examples of how to get value information from the public.

That's not to say that they're not open

to the same kind of criticisms that Mr. Martel was making before, that perhaps you will get biased responses, but at least a lot of effort now goes into a avoiding that.

Now, that's the first comment I wanted to make by way of introduction.

The second is, you might be thinking, if we've got the travel cost method, why bother to ask people; if we can really impute value from observed behaviour, why would we not want to rely on that perhaps more reliable method?

The reason is this: That we recognize there are already two categories of value that people get from forests and the environment generally, there's the value they get from the use of the forest, actually going there, participating in recreation, but there's also the value that people may get from knowledge of the existence of the forest, or knowledge of the existence of certain species, and the term that is given to that is existence value.

Now, the nature of existence value, if it's real, is that you can't measure it by observing peoples' behaviour because people don't behave in any way that would reveal that value. You sit in your arm chair - or is it the front porch - in Toronto and

believe that you value the beluga whales in the St. Lawrence, but there's no expression of your behaviour which would show to a social scientist that, in fact, you do place a value on that.

And, therefore, the only way we have of finding out whether people do place a value on the existence of species, the existence of certain forest stands, et cetera, is to ask them. And that's one of the main reasons why the contingent valuation method is now quite widely used in these sorts of areas.

What we find is that economists then use the contingent valuation method to value both the use value, to find out how much people value the use they are actually making of the forest, but we also use it to find out what value they attribute to existence.

I'm going to begin by making some comments on the use of the contingent valuation method for use value.

Now, several of the travel cost studies I described earlier also -- well, they got their information from questionaires; in other words, they asked people: Where did you come from, what activity did you take part in, how much did it cost to travel, all of those rather simple questions to answer, but they also asked questions about: How much would you be

willing to pay over and above what you already paid in order to enjoy this kind of trip. That's a contingent valuation question.

Now, I've put before you an example of such a question. So this comes after the respondent has been asked to talk about where they went fishing or hunting and how long they were there for, and so on.

Next I would like to ask some hypothetical questions about this trip to - wherever the place was - assume the trip became more expensive, perhaps due to increased travel costs or something, but the general bird hunting conditions were unchanged, you indicated that - and here a number is filled in based upon their previous response - that a certain number of dollars was spent on this trip for your individual use, would you pay, and then the respondent is asked a sum which is 20 per cent of the amount that they reported they did spend, would you pay that amount more than your current cost rather than not be able to hunt birds in this area.

Now, if they said yes, that's a simply yes or no answer to a somewhat lengthy question, then the person administering the questionnaire would raise the sum to 40 per cent, 60 per cent, until there comes a point where the person says, no, I wouldn't be

prepared to pay that.

Now, you might imagine, and you would be correct to do so, that some people when asked to answer questions like this don't want to give an answer, they protest, they say, I shouldn't have to pay or I don't know how to answer that question, that's a stupid question. I mean, there are all sorts of protest responses you get.

When this survey was done the reasons for any protest responses were recorded, in fact, there were very few. The percentage of protest responses was a few per cent, but nevertheless those are there and you generally find them with contingent valuation studies.

Now, what's interesting in all this is the very last two lines I put on here. As I said, the questionnaire here was used to feed into a travel cost study and a contingent valuation study. What that made possible was a comparison of the estimates of value based on the two methods, and what happened - not just in this particular study by Young, but the others that I mentioned to you which were all done in a somewhat similar fashion - was that the estimated value based upon the travel cost model were very similar, not identical, but within the same general range as the

estimates of value from contingent evaluation.

This, of course, is encouraging news to economists who rely on contingent valuation method, on that method when they have no other method, because what it's saying is the answers people give to the hypothetical question seemed rather consistent with the values that economists impute based upon their observed behaviour.

And that gives us some confidence then that when we only have the contingent valuation method to use, if the questions are framed properly, the context set up well, then the answers we will get may be quite reasonable.

So all that I've said so far about contingent valuation relates to its application for estimating use value. This is the value of people who actually visit a site.

I'll come in a moment to its use for valuing existence value. Here are some conclusions in addition to the one I've already given you based upon these contingent valuation method studies.

One of the advantages of contingent valuation is that you can apply it quite easily to people who have gone to many different places on a trip. The travel cost method, it's one of the

complications, that people may not have just come from their origin to a particular lake to go fishing, they may have gone to five lakes, so have you assigned the travel cost then to each of those visits. That is complicated.

With the contingent valuation method it's much more flexible and you can just ask people, how much did you value those trips.

Secondly, it turns out that there doesn't seem to be a big problem in getting people to answer these questions. The experience is that you get relatively few protest votes and others say when you compare the results from the two systems, two methods, they come out fairly comparable.

A limitation of the contingent valuation method is that you may want to value recreation over a whole year and a person may have taken 10 trips in that year, but to ask them about willingness to pay for trips that they can barely remember or not remember very well, one has to be rather concerned about the reliability of the answers.

So this author in particular, Donnelly, takes the view that the method is most suitable for valuing the most recent trip, the one that's freshest in their mind.

And, finally, I just note that to do the analysis, once you've got the results of the questionaires in, took about one and a half days.

Now, before I move to the application of contingent evaluation for existence value and option valuing, I want to make a point which I think is important.

The question often comes up in discussions of valuing sorts of things that I'm talking to you about today, non-timber values, that: Well, how can you value aesthetics, how can you value beauty. And that's a fair question.

But to an economist we recognize that one of the reasons people will pay for a beautiful painting is because of the beauty of the painting, the painting has a market price and we can work with that. Likewise, one of the main reasons why people will pay through the travel cost to go to an area for recreation is because the area is beautiful.

So what I'm saying to you is that the significance that people attach to the beauty of the area is already built in, partly to the fact that they actually will go there for recreation. So what I'm saying here is that the evaluation of aesthetics is not off on its own.

The reason people enjoy recreation is because it includes aesthetic relationships, includes all sorts of things, includes friendship and ecclesiality. We don't try generally to value those things item by item, we just recognize that people like to go fishing, whatever, and will pay to do that. So, in other words, the valuation of quality of beauty is already built into the values that we have estimated for recreational use.

Where it becomes problematic from an implementation point of view is, as I said, with respect to existence value, where you don't have any use to observe. Now, existence value has been looked at and continues to be looked at by economists from different perspectives.

Some economists - and I mentioned Krutilla before, when he actually introduced the concept, defined it very simply, just said: Look, people seem to attach value to the existence of natural assets. If that's true, we ought to better estimate it. Other people have taken existence value and said: Well, we value other species, we value what we can leave to our children, we value what we can leave to other peoples' children, we might get vicarious value from the fact we know other people are going there and

that makes us happy.

So they tried to sort of break it down into many components. I don't think that's essential, I think the key point is to recognize that in some cases, particularly with respect to resources which are unusual or unique, there is evidence to show that people who never go to see these places, never intend to go there still attach value to their continued existence.

And, as I said before, the only way we have of trying to assess that value in economic terms is through a questionnaire where we ask people how much value they attach.

Now, turning to this slide, I have a reference to a paper by Randall written last year, published last year, where he cites a dozen contingent valuation studies that were variously concerned with existence value and option value.

Option value is the value people attach to just keeping an option open. Again, it's not something you can observe through their use, it's something though that people attach value to, it's a value of maintaining an option for the future. So it's, if you like, reserving the option for future use.

It's different, therefore, from existence

value which says not interested in using it at all, just like to know that something is there. Option value is a separate category and it's the value that people may attach to preserving option to do something.

So in Randall's work he reviews a dozen studies concerned both with existence value and option value. Three were concerned with wilderness and wildlands and one with hunting, and he makes the following comment, which I think is really important. He says:

> "In many routine benefit estimation contexts existence values will be unimportant. Nevertheless, this inclusion should be approached cautiously, the burden of proof should always lie upon the analyst who claims existence value does not matter."

Now, I take what he means by 'routine benefit estimation context' to mean those contexts where you're not dealing with something that is unusual, in fact, you're not dealing with something where existence is a critical factor.

And, in those situations, existence value won't be significant and may not have to be addressed; in other situations where you are dealing with perhaps

an endangered species, whether that's of flora or fauna, existence value is likely to be important. We've got lots of evidence to show that people don't like to see species disappearing and 'don't like' to an economist means, yes, what are you prepared to do about it, would you be willing to pay something if something could be done to preserve the species.

Well, I'm now going to turn to examples of the routine use of non-timber values in resource management. I've talked at some length about the different methodologies, some of their strengths and weaknesses, but I think it's important now to see that these methods and the values that they are used to generate are used on a routine basis in several different types of resource management activities.

The first one that I'll just mention, and I'll go through these fairly quickly, is the U.S. Department of Interior's Computerized Damage Assessment Model for Valuing Damages in Marine and Coastal Environments.

In other words, when there's a spill offshore and compensation has to be paid, there's a standard computer model now which is provided, at no cost, where you put in basic biophysical information about the area and there is an economic valuation

component which deals with damages to certain kinds of marine life and you run the model and you get an estimate of the compensation that needs to be paid. In serious cases you do a site-specific study but in the minor cases, which are the majority, it's a routine exercise.

MR. O'LEARY: Q. Dr. Victor, has this computer model been used in the United States?

DR. VICTOR: A. Yes. As far as I know it's used on a frequent basis.

Q. And has it been used in a legal setting to assign value?

A. Again, my information is yes.

Q. That it has been accepted?

A. Yes, it has been accepted.

Q. In the court process?

A. Yes, as far as I know, yes.

The second example from a different area is concerned with electrical energy, and in the United States many utility regulatory commissions require the incorporation of economic values of environmental damages in the assessment of alternative demand management and supply alternatives.

So when different suppliers of electrical energy are putting their best case to the regulatory

commissions that they wish to supply energy in a certain way - and that sometimes by the way is demand management, that's reducing demand as well as increasing supply - then, in many of the areas, and it's a growing number, they are obliged to include an estimate of the economic value of environmental damages. So that tends to favour the demand management options where the damages are may be zero or small and disfavors some of the significant energy supply options.

Thirdly, related to that is an Ontario, case I've already mentioned I'll mention again, Ontario Hydro includes in the price it charges Americans when it generates power that's exported an estimate of the value of the environmental damages that are related to the generation of power. Those damages include aquatic damages, loss of -- which means loss of fishing and the value of losses of fishing based upon the methodologies I've described to you, that includes any effects on terrestrial mammals, includes damages to forests, to all -- estimates of those things are all included in the extra charges that are imposed on the American customers.

MADAM CHAIR: Do you have any idea, Dr. Victor, what the size of those charges could be?

DR. VICTOR: Yes. I think they're roughly about 10 per cent of the generation costs. The work that was done to estimate the damages though teaches us something very important; and, that is, that it matters very much where the electric is generated. If you generate electricity at a plant which is a long way from human population, then the health damages are much less than if it's generated in a plant that's closer to population.

I mention that because I think in drawing lessons from this case that are relevant to forest management and timber management, I think you'll find again in some cases the site-specific situation is important, that sometimes we can use across-the-board estimates, in other cases we've got to look more closely and estimate the specific values.

Continuing on with the examples of the routine use of non-timber values. In the U.S. the Forest Service incorporates economic values for various recreational activities in its programming model called FORPLAN and FORPLAN has been applied to many forest management plans in the United States.

So it's the standard fairly standard practice there to incorporate explicitly an economic value of various non-timber values precisely for timber

management planning in the United States.

The next example, the United States Water Resources Council was set up in the early 60s to administer guidelines precisely on the issue of methods to be used in planning water and related resource developments by federal agencies, and so there are published guidelines. Water Resources Council has authorized the use of both the travel cost method and the contingent valuation method for these purposes.

Now, a comment from Walsh and others, 1989, where he notes that:

"These guidelines have been reauthorized by presidents of both parties."

He interprets that as follows, he says:

"The bipartisan political support in the past indicates their broad acceptability within and outside of government."

In other words, it doesn't seem to be an issue over which political parties divide.

MR. O'LEARY: Q. Dr. Victor, you referred to the term guidelines. What do you mean by your use of that word?

DR. VICTOR: A. Yes. These guidelines are published in a handbook; in other words, the handbook lays out for practitioners how water resource

options are to be evaluated, that includes both the marketable outputs, the water if it's going to be sold, how that's to be valued, and it deals with some of the issues that we were discussing before when the market price may not be an appropriate measure of value. It also includes methods for valuing those items which are not sold through the market.

So it's a procedural document. It says, this is how it can be done and these are the alternative methods that can be used and are acceptable.

The last item on this slide is that, again turning to the U.S. as a source of experience, in accordance with the Forest and Rangelands Renewable Resources Planning Act of 1974, the U.S. Forest Service has released pricing and valuation guidelines for 10 categories of forest-based recreational activities for each of 10 regions.

In other words, they specified 10 types of recreation and they've developed generic estimates of value for these 10 activities in each of 10 regions covering the whole country, and I believe we have that document here and we'd like to file it as an exhibit.

MR. O'LEARY: We have already left one in front of you, Madam Chair. Perhaps we can mark that as

the next exhibit.

MADAM CHAIR: Yes. This will become Exhibit 2115, and the title is Resource Pricing and Valuation Procedures for the Recommended 1990 RPA Program, and it is a document of 33 pages in length.

---EXHIBIT NO. 2115: 33-page document entitled: Resource Pricing and Valuation Procedures for the Recommended 1990 RPA Program.

DR. VICTOR: So that document explicitly sets out values for each of 10 recreational activities, forest based recreational activities by region that can be used in timber management planning in those regions.

Earlier I said that those of us who work in this area attach particular significance to the views of Bowes and Krutilla because of their stature, and so I've got here a few more important quotes from their text. The first one:

> "While the Forest Service has always had a stated concern for the non-timber resource services, it was not until after World War II, with the rapid increase in demands for both timber and outdoor recreation and resulting political pressures on behalf of such single purposes, that the need for explicitly

balanced operating criteria became apparent."

And I made the point earlier that that was the situation that emerged in the United States close to 50 years ago now, and I think what we're seeing is the same sort of situation emerging now in Ontario, where the pressures on the resource base for recreation are beginning to require a more systematic evaluation of the full range of services the forests can supply.

Bowes and Krutilla go on to comment that standards, by which they mean constraints I believe, in the way that term is being used at the hearing, the limits on what can be done when harvesting is undertaken or access roads are being put in:

"Standards, although often intended to protect amenity values, tend to limit the possibility for advantageous specialization of uses on different areas of the forest."

So what they are saying there is that rather than impose the same constraints almost regardless of location in a cookbook fashion, a lot can be gained by looking at the possibilities for differences in use in different areas.

So, for example, from an economic point of view, a lake to which there is ready access we might find has greater value because it's the value to the local population, than a lake which is further away, and the difference then in the economic value of the two lakes, a recognition of that difference could well lead to differences in the way that timber management is practised in those areas.

Bowes and Krutilla go on to say:

"The introduction of multiple use values does often lead to a change in the optimal level and timing of timber harvests, but not always in a manner that might be anticipated. In some cases consideration of multiple use values may lead to higher levels of harvest despite non-timber uses which seem incompatible with timber harvesting."

Now, this might seem like a surprising result and there are various ways in which it can be illustrated, but one which is access roads. It can happen that if you look at the cost of building a new access road and you look at the value of the timber it will lead to, the cost of the road may be greater than the value of the timber, but the road may well also

open up recreational opportunities, and once we recognize that also has value, can sometimes show the combined value of the timber and the recreation are sufficient to justify expenditure on the road.

And I think this is a point that I very much want to underline. I think that in some of my previous comments I may have given the impression that it's an either/or case, that you either plan for timber harvesting in an area or for recreation. That's not the message I wish to give here.

As I said right at the outset, we're dealing with joint products. When you change the forest structure, you change its capacity to supply both timber and non-timber values and it can often happen that they can be changed in the same direction so an intervention can both increase timber values and non-timber values simultaneously.

So one should make no prejudgment that because we start to value non-timber values in economic terms we're always talking about shifting the use of the resource base away from timber to recreation. When we lay out the various alternatives in a timber management plan, then we will find by valuing them in the ways I've suggested which combination of services is the best.

So there's no prejudgment here by saying that using these valuation systems is definitely going to lead to a certain kind of result, if you knew that you might just go straight to the result. We don't.

As an example of this I again quote Bowes and Krutilla who say that:

> "It appears the subalpine forests in Colorado are not economic for timber production; if, however, timber is managed in conjunction with water augmentation programs, the joint product may have a value that will exceed joint resource management costs."

So that's an example that's explored by them.

I want now to comment briefly on some of the practical implications of incorporating non-timber values in timber management. In other words, what does it take to do this.

Well, first of all, one has to be familiar with the literature on how non-timber values are to be estimated and also with experience elsewhere in their use and managing natural resources. In the remarks I've made to you today I hope I've shown that there is a literature, that its existence is

well-known, that there's also a good literature on experience elsewhere and so to become familiar with this literature is not a particularly demanding task, in fact I hope that, in a modest way, that our evidence that we're putting before you will help with that process.

Secondly, to implement the use of non-timber values in timber management in Ontario, it would be very helpful for all of the various studies on non-timber values that have already been made and which might be directly applicable to Ontario to be assembled, to be synthesized, to be brought together in one place.

A number of these studies which are known to myself and Dr. Kubursi are there, but I think with a small extra effort a more complete story could be told.

The third step would be to develop technical manuals for the estimation and use of non-timber values by staff of the Ministry of Natural Resources and such manuals, as I pointed out, already exist in other jurisdictions, and so it wouldn't be a question of starting from scratch so much as adapting what already exists to suit Ontario's circumstances.

The next step that would be required would be the coordination of routine data collection of

forest use patterns suitable for economic evaluation. I've mentioned to you what I believe to be the very modest data requirements for the travel cost method, you have got to know something about where people participate in recreation, where they come from, and what kind of activity they undertake, and there should be more effort made to bring that data together in a consistent way.

Now, I don't want to leave you with the impression that we know all the answers, in fact, this is a rapidly developing area. I think one would have to say that real progress is being made in our understanding of the various evaluation methods, their strengths and weaknesses and how to improve them, therefore, I think it's important that there be a research program in Ontario that will both develop generic estimates of non-timber values and also maintain a familiarity with the expanding work in this area that's going on now internationally. The generic estimates of course would then be usable by those engaged in timber management.

Generic estimates are useful in many cases, but in some circumstances, where unusual situations are being addressed, or where a particular value seems much higher or much lower than the generic

value might suggest, you would have to develop criteria for discerning when site-specific estimates should be made. This is very similar to the example I mentioned before with the model that is used in the U.S. to estimate marine damages, you have your standard package model for the simpler cases, and then criteria for when you have to go to a more refined estimate.

I come now to my very last slide, the very last topic that I wish to make some comments on at this point.

There have been many, many studies of non-timber values and I'm glad to say there have been a number of studies where the authors have said: Okay, let's look at all the studies, let's bring them together in one place. There have been several studies which have very helpfully synthesized the estimates. One very important example is a study by Walsh which we wish to enter as an exhibit at this point. So why don't we do that and I'll talk about it in a moment.

MR. O'LEARY: Madam Chair, I believe we have also left a copy of that -- two copies in front of you as well, and this is a paper dated December, 1988 by Walsh, Johnson and McKean entitled: Review of Outdoor Recreation, Economic Demand Studies With Nonmarket Benefit Estimates, 1968-1988.

MADAM CHAIR: This will become Exhibit 2116. How many pages does it have? 130 pages?

MR. O'LEARY: That's correct. This was done for the Colorado Water Resources Research Institute, Dr. Victor?

DR. VICTOR: It was done by --

MADAM CHAIR: Oh, I see. And the research was sponsored by the U.S. Forest Service.

DR. VICTOR: Yes.

MADAM CHAIR: All right.

DR. VICTOR: Yes. I think the Colorado Water Resources Institute is the organization -- we'll say the organization they're affiliated with. They're all with the Colorado State University, so I suspect they're also affiliated with the Research Institute there.

---EXHIBIT NO. 2116: 130-page report entitled: Review of Outdoor Recreation, Economic Demand Studies With Nonmarket Benefit Estimates, 1968-1988 authored by Messrs. Walsh, Johnson and McKean.

DR. VICTOR: Now, this study analysed 287 estimates of non-timber values obtained from a review of 120 studies, so some studies contained estimates of several types of recreational value, and they applied careful statistical analysis to make the estimates from

the different studies comparable with one another.

In this developing area sometimes people make different assumptions about certain aspects of their work, and what the authors of this study did was to go through each study and adjust the estimates so as to make the assumptions on which the ultimate results are based as comparable as possible.

And it is this study which is a primary basis on which the values in that previous exhibit, Exhibit 2115, are based. These are the values that are -- the generic values being used in the United States for timber management planning as far as non-timber values goes.

I would like to draw your attention briefly to two of the tables so that you have an appreciation of the level of detail for which estimates have been arrived at.

On Table 1 on page 9, if you would please turn to that, you'll see down the lefthand side of the table all of the different kinds of outdoor recreational activities for which estimates of value have been generated. You'll see it includes camping, picnicking and swimming, mechanical travel and viewing, hiking, horseback riding and water travel and so on, and then down lower, different kinds of hunting and

fishing.

Then I want to direct you to the column headed mean, that's the third data column over, and this is the arithmetic average of the value of each activity based upon all of the relevant studies covering that activity. And it shows at the very top row the average value of a visitor day across all activities based on all of these 287 different estimates comes out at $33.95. And then underneath that column you see how that daily value varies depending upon the activity.

Now, if you come over to the last column but one, the one that says 95 per cent confidence interval, what that -- there you see a range for every row. So for the top row we have a range of $30.68 to $37.22.

What that says is that the range of most of the estimates fall -- sorry, most of the estimates fall in that range. So the mean is $33.95 but each study is going to come up with a different number, but they almost all cluster within the range of $30.68 and $37.22, suggesting that the estimates are quite close to one another.

Now, as you go down the column you see that that 95 per cent confidence interval for

individual kinds of activities gets larger, but nevertheless the range, depending on how you interpret it, the range is not in many cases particularly great. It might be a ratio of 1:2 from the lower end to the upper end. So what this suggests is that the range of values - and bear in mind these studies cover the whole of the United States - is, in many cases, not that great.

It gives us some confidence perhaps, at least within the U.S. context, that if you have an estimate of value based upon one area, it may not be totally unreasonable to use it in another area because what we're finding now from all of these studies is that the estimates fall within a reasonably narrow range of limits.

MR. O'LEARY: Q. Dr. Victor, could I just ask you for one second to turn to page 129, which is the bibliography at the end.

DR. VICTOR: A. Yes.

Q. And at the top of page 129, the second one there is reference to study in which you were involved in?

A. Yes.

Q. Product Travel Cost Approach Estimating Acid Rain Damage to Sport Fishing in

Ontario. Can I ask you, is there any relevance between what was done in preparation of that report and your findings as identified, or the findings as identified on page 9 of this report, any similarity in the studies?

A. Well, let me just, yes, explain. They analysed the results of all of the studies that appear in the bibliography and one of them clearly is the one that you mentioned that I and Mr. Hanna were contributors to.

It's gratifying, of course, to see the reference there. I'm just checking the values for fishing that appear in the table on Table 1, and my recollection is that the values we estimated for the Haliburton/Muskoka area are fairly similar to the values that are shown in this table.

Q. All right. Any view as to whether or not the values that you determined in your paper are similar with those in other studies, other than Exhibit 2116 which you've just been referring to?

A. Yes, definitely. When -- subsequently to that study I did some work for Ontario Hydro, the studies that I have mentioned to you already, where we were estimating the value of damages to aquatic resources due to the emissions from export.

We looked at how our value of an angler day compared with similar values developed in many, many other studies to see whether it was reasonable to continue to use that estimate from the 1983 study or whether we should use some other estimate, and what we found is that our estimate really fell well within the range of estimates of other studies, was quite consistent with the literature, yes.

Q. Thank you.

A. Well, I'll turn finally to Table 4 on page 23. Table 4, page 23 shows a similar list of outdoor recreation activities down the lefthand column, but now it shows along the top row different forest regions, and the body of the table, therefore, is to be read as follows: It shows the economic value for a day's activity of the different kinds of activities in each of those regions based upon this comprehensive review of the literature.

And so this is an example of the kind of generic estimates of value which are available to be used in timber management planning and they are developed for the United States. They are most relevant to the United States, although now having had it drawn to my attention that at least one Canadian study was included in the database, it does give some

additional credence to the view that if there was nothing else to work from, if we in Ontario had nothing else to go on for valuing outdoor recreation in the context of timber management, these values that are on this table would be better than not to use any values at all.

And with that, I will end my part of the presentation. Thank you, Madam Chair, Mr. Martel.

MADAM CHAIR: Thank you, Dr. Victor.

Mr. O'Leary, it's four o'clock. I guess we won't start Dr. Kubursi.

MR. O'LEARY: I think it would be preferable to start Dr. Kubursi's presentation, which will be shorter, tomorrow.

MADAM CHAIR: How long would you expect tomorrow to be in leading that evidence?

MR. O'LEARY: I think we may take up the balance of the day. We're going to -- not with just Dr. Kubursi's presentation.

MADAM CHAIR: That was my question. How long will you be in examination-in-chief with Dr. Kubursi?

MR. O'LEARY: Following that, probably the balance of the day.

MADAM CHAIR: So Ms. Swenarchuk won't

begin her cross-examination until Wednesday morning, is that what you're saying?

MR. O'LEARY: Yes.

MADAM CHAIR: Mr. Freidin?

MR. FREIDIN: Are there going to be some more documents, additional new documents which will be the subjective matter of examination tomorrow?

MR. O'LEARY: I was going to suggest before we -- yes, there's not much left, but I was going to suggest before we recess for the day that we provide everybody with copies of any additional documentation we are going to refer to, and there are a few housingkeeping matters as well, such as the errata and the attachment that --

MADAM CHAIR: All right, let's do that Mr. O'Leary.

MR. O'LEARY: All right. Nine-page errata that we have marked as Exhibit 2110A. (handed)

And then we have an update on the transcripts reviewed and exhibits reviewed and, again, we can perhaps file those under the appropriate tab in the witness statement. (handed)

Madam Chair, why don't I just provide you with two copies of each of the documents we are going to be referring to tomorrow and we will make reference

to them at that time.

MADAM CHAIR: Shall we just go ahead and give them an exhibit number now, Mr. O'Leary.

MR. O'LEARY: All right, if that's preferable.

MADAM CHAIR: Any particular order you want these to be exhibited, Mr. O'Leary?

MR. O'LEARY: No, I don't believe so. They weren't given to you in any precise order, so...

MS. SWENARCHUK: Madam Chair, there are only two that require exhibit numbers; is that not correct, the others all fit in here?

MR. O'LEARY: Well, they're complete copies. You're talking about the material under Tab 15?

MS. SWENARCHUK: 6.

MR. O'LEARY: 6, I should say.

MS. SWENARCHUK: Yes. I just wanted to make sure I've got them all.

MADAM CHAIR: Under Tab 6 we would include the North Algoma Study.

MR. O'LEARY: I see under Tab 6 we only reproduced a portion of that and the Toward 2000 paper.

MADAM CHAIR: Yes.

MR. O'LEARY: And we have now filed the

complete document.

MADAM CHAIR: All right. So, as Ms. Swenarchuk has pointed out, we won't need an exhibit number for the North Algoma Study, we will all put it into our Tab 6 material.

MS. SWENARCHUK: I don't think we have a complete Toward 2000.

MR. O'LEARY: That's been added.

MADAM CHAIR: And is that this document?

MR. O'LEARY: Yes, I believe so.

MADAM CHAIR: It simply says, Economic Impact of Tourism in Northern Ontario.

MS. SWENARCHUK: I don't believe I have that.

MADAM CHAIR: Yes, Mr. Freidin?

MR. FREIDIN: Madam Chair, I'm just wondering, rather than marking these now, when we read the transcripts the reporter usually indicates this exhibit got put in and they indicate the page, it makes it much easier when you're reading the transcript to find out where the evidence is in relation to that exhibit.

MADAM CHAIR: That's fine, Mr. Freidin, we'll do it tomorrow then.

And, as well, we're not going to take

apart our witness statement, and so I think tomorrow we will give a separate exhibit number to the Algoma study.

MR. O'LEARY: All right. That's it, you will be happy to hear.

MADAM CHAIR: Thank you very much, Mr. O'Leary.

Thank you very much, gentlemen, Dr. Victor and Dr. Kubursi. We have a procedural session beginning now --

MR. MARTEL: No, it's tomorrow; isn't it?

MADAM CHAIR: Is it tomorrow?

MR. O'LEARY: Yes, the 25th.

MADAM CHAIR: Oh, we're finished. Great. We'll be back tomorrow morning at nine o'clock.

---Whereupon the hearing was adjourned at 4:10 p.m., to be reconvened on Tuesday, February 25th, 1992, commencing at 9:00 a.m.